

Freedom of Information Act (FOIA) Request: EPA-R4-2019-006039 – Request Summary:

(1) Please provide me with any record, email, written correspondence, etc. discussing, detailing, analyzing, or evaluating the Section 303(d) impairment of the Cullasaja River in Macon County, North Carolina, dating from 1998 forward (as prepared by officials of the US EPA, employees of the state of North Carolina or any individual citizen or private organization)

(2) Please provide me with all reports and records detailing the results of any macroinvertebrate study conducted on the Cullasaja, including the precise numbers and precise assemblage of pollution tolerant and pollution intolerant species sampled on the Cullasaja, for all sampling stations used, for the period of time reaching from 1998 to the current;

Records pertaining to the above are only state-submitted documents; located in our 303(d) Administrative Records for North Carolina. All are found online. Links are provided below.

There are no emails, written correspondence in our records as described above.

NC Integrated Report files – from 1998 – 2018. Each Integrated Reporting cycle will document the impairment status of the Cullasaja River. Note that the Assessment Unit (Index #) 2-21-(0.5) in 1998 was split in later years as more monitoring data allowed for better delineation of the impairment. The segment from the source to 0.6 miles downstream of US64, 2-21-(0.5)a, was delisted in 2012 due to an improvement in benthic scores at the monitoring site in that upper segment. The lower portion, impacted by the city of Highlands, remains on the 303(d) list to this date. Each Integrated Reporting cycle document can be found here:

<https://deq.nc.gov/about/divisions/water-resources/planning/modeling-assessment/water-quality-data-assessment/integrated-report-files>

[NC DEQ: Integrated Report Files](#) deq.nc.gov

303(d)/TMDL Listserv: To receive important 303(d) or TMDL announcements send a blank email to denr.dwq.TMDL303d-subscribe@lists.ncmail.net then reply to the confirmation email you receive. Integrated Report 303(d) 305(b) Files 2018

Specifically, the Cullasaja was first 303(d) listed in 1998. NORTH CAROLINA'S 1998 303(d) LIST Department of Environment and Natural Resources Division of Water Quality May 15, 1998:

<https://files.nc.gov/ncdeq/Water%20Quality/Planning/TMDL/303d/1998%20303d%20list.pdf>

[NORTH CAROLINA'S 1998 303\(d\) LIST](#) files.nc.gov

North Carolina's 303(d) List NC DENR-Division of Water Quality page 3 What is the 303(d) list? Section 303(d) of the Clean Water Act (CWA) requires states to develop a list of waters not

Also incorporated by reference in the Administrative Record for each listing cycle are the State's Basin Assessment Reports and Basin Water Quality Plans. The reports pertaining to the Little Tennessee Basin are all available online. Links provided below.

NC DEQ DWR Water Sciences Section - Basin Assessment Reports

Reports, Publications and Data: <http://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/reports-publications-data>

[NC DEQ: Reports, Publications and Data](http://deq.nc.gov) deq.nc.gov

Of recent Interest, Catawba River Basin Nutrient Study, Oct. 1, 2018. 1,4-Dioxane in the Cape Fear River Basin of North Carolina An Initial Screening Study 1,4-Dioxane Monitoring in the Cape Fear River Basin of North Carolina: An Ongoing Study

Little Tennessee River Basin

[2000 Basin Report](#)

[2005 Basin Report](#)

[2010 Biological Assessments Template Summaries A](#) [Template Summaries B](#)

[2010 Lake and Reservoir Assessments](#)

[2010 Ambient Monitoring Report](#)

[2010 Whole Effluent Toxicity Report](#)

[2014 Lake and Reservoir Assessments](#)

NC DEQ DWR Water Planning Section - Basin Water Quality Plans Little Tennessee River Basin

<https://deq.nc.gov/about/divisions/water-resources/planning/basin-planning/water-resource-plans/little-tennessee>

[NC DEQ: Little Tennessee](http://deq.nc.gov) deq.nc.gov

Little Tennessee River Basinwide Water Quality Plans Cycle 4 - July 2012 Cycle 3 - March 2007 Cycle 2 - April 2002

1. Basinwide Water Quality Plans

- [Cycle 4 - July 2012](#)
- [Cycle 3 - March 2007](#)
- [Cycle 2 - April 2002](#)
- [Cycle 1 - May 1997](#)

2. Integrated Reports

- [2012 Integrated Report 305\(b\) and 303\(d\)](#)
- [2010 Integrated Report 305\(b\) and 303\(d\)](#)

3. Use Restoration Watersheds

- [Scott Creek and Savannah Creek Watersheds](#)

4. Additional Resources

- [Upper Cullasaja River Watershed Strategy & Action Plan 2004](#)

5. Links

- [Friends of the Greenway, Inc.](#)
- [Little Tennessee Watershed Association](#)
- [Watershed Association for the Tuckasegee River \(WATR\)](#)
- [Western North Carolina Alliance](#)
- [The Land Trust for the Little Tennessee](#)
- [Southwestern Commission](#)

6. Archive

- [Upper Cullasaja River Assessment Report:](#) Biological Impairment in the Upper Cullasaja River Watershed, November 2002.

(4) Please provide me with any record, email, written correspondence, etc. discussing, detailing, analyzing, or evaluating whether or not the Chattooga's headwaters (Macon and Jackson Counties, North Carolina) stand in violation of the Clean Water Act's antidegradation policy (codified at 33 U.S.C. §1313(d) (4)(B), as further informed by 40 CFR 131.12, 48 FR 51405, Nov. 8, 1983, as clarified by US Environmental Protection Agency (US EPA). 2012. Water Quality Standards Handbook: Chapter 4: Antidegradation. EPA-823-B-12-002. US EPA Office of Water, Washington, DC. Accessed May1, 2019. <https://www.epa.gov/sites/production/files/2014-10/documents/handbookchapter4.pdf>), dating from 1998 forward (as prepared by officials of the US EPA, employees of the state of North Carolina, or any individual citizen or private organization).

(5) Please provide me with any record, email, written correspondence, etc. discussing, detailing, analyzing, or evaluating whether or not the Chattooga's headwaters should be placed on the Section 303(d) list of impaired waters, dating from November 5, 2014 forward (as prepared by officials of the US EPA, employees of the state of North Carolina, or any individual citizen or private organization).

Project Information

Contract # 99465710

Region 04

State NC

Appropriation FY 2010

Report 30

General Information

Project Description

Project Title: I-8 Upper Cullasaja Watershed Restoration Planning

Sub-Project Number: Contract #3636

Subgrantee

Overview

The Upper Cullasaja River forms in the Blue Ridge Mountains of Western North Carolina and is part of the Little Tennessee River basin. The 14.4 square mile watershed is contained in an area defined as the "Highlands Plateau," and begins at the confluence of four main streams: the Cullasaja River (303d listed), Mill Creek (303d listed), Big Creek and Monger Creek. Several past planning efforts to define problems and make recommendations for the restoration of this watershed have been completed. This project proposes to work with students from UNC Chapel Hill studying at the Highlands Biological Station to collect additional baseline data and to review, analyze, combine and update this information into an approved nine element watershed restoration plan.

Objectives

The Upper Cullasaja River forms in the Blue Ridge Mountains of Western North Carolina and is part of the Little Tennessee River basin. The 14.4 square mile watershed is contained in an area defined as the "Highlands Plateau," and begins at the confluence of four main streams: the Cullasaja River, Mill Creek, Big Creek and Monger Creek. The Upper Cullasaja River watershed is compromised due to development in and around the town of Highlands, North Carolina (Fig. 1).

Highlands is situated in a temperate rainforest and is a biodiversity hotspot due to its high annual rainfall and unique geographical location at the southern terminus of the Appalachian mountain chain. The Highlands Plateau boasts spectacular diversity in a number of taxonomic groups, particularly aquatic animals. Mountainous headwater streams, such as Mill Creek, constitute the primary breeding habitat for aquatic and semi-aquatic salamanders such as Seal (*Desmognathus monticola*), Ocoee (*D. ocoee*), Blackbelly (*D. quadramaculatus*), Two-lined (*Eurycea cirrigera*), Spring (*Guriniophilus porphyriticus*), and Red (*Pseudotriton ruber*) salamanders. These habitats provide slow-moving and shallow water with the detritus food web and stream-to-land interface that are required by these species to deposit their eggs. In addition, aquatic invertebrate fauna in these headwater reaches emerge as important sources of food for insectivorous avifauna and fish, critical in supporting the rich diversity of these species that are found on the Highlands Plateau.

Historically, sedimentation from poorly controlled stormwater runoff carrying loose material from roads, roadsides, construction sites and other disturbed areas has been a leading cause of impairment in the watershed, although according to a 2002 watershed study [<http://h2o.enr.state.nc.us/swpu/cullasaja/ucfinal.pdf>] completed by the North Carolina Department of Environment and Natural Resources Division of Water Quality (DWQ), this is just one of several factors causing impairment of Mill Creek and the Cullasaja River, both 303(d) listed streams in the project area. According to a 2004 report completed by the Upper Cullasaja Watershed Association (UCWA), the Upper Cullasaja river at US 64 has a bioclassification of fair, which earned it listing on the state's 303d list for impaired water bodies.

Specifically, Mill Creek is impaired for biological integrity because it is "unable to support acceptable communities of aquatic organisms" (NCDENR 2002). The Cullasaja River was listed in the early 1990's because of Poor and Fair benthic macroinvertebrate classifications (NCDENR 2002). This proposal will utilize the talents and resources of its partners to update the information contained in the 2002 DWQ watershed study and the 2004 UCWA Strategy and Action Plan to assist in the creation of an approved nine element watershed restoration plan for the entire 14.4 square mile area of the Upper Cullasaja watershed. We hope that by creating a thorough watershed restoration plan, LTWA and its partner organizations working in the area will be in a good position to prioritize and systematically complete future restoration projects that will improve water quality in the Upper Cullasaja watershed. We also intend to use this plan to influence future planning and development activities to avoid additional adverse impacts on the resource.

Through numerous monitoring efforts spanning the last 20 years, we are fortunate to have a solid collection of baseline data to assist with this project. For example, Mill Creek had previously been utilized as an educational area for salamander and aquatic invertebrate collection, so baseline studies in 2006 and 2008 exist (Purvis 2006, Brannon and Purvis 2008, Bost et al. 2008). Historical data has also been collected by the Department of Environment and Natural Resources Division of Water Quality.

Through its Biomonitoring Program the Little Tennessee Watershed Association has been monitoring Big Creek and Mill Creek regularly for fish community assessments (IBI) and benthic macroinvertebrates. This will continue into the future to document recovery from any restoration work that is completed as a result of the watershed restoration plan. Likewise, the Highlands Biological Station will continue to host UNC Chapel Hill undergraduate students that will continue to monitor salamander populations and benthic macroinvertebrate population recovery after this project is completed. Beginning in 2010, HBS students are planning and implementing a watershed-wide monitoring effort in anticipation of the nine element watershed plan being created.

If received, funding from this proposal will be used to accomplish the following activities:

- (1) Hire a consultant to work with LTWA and HBS to collect new baseline data and assemble relevant past studies of the Upper Cullasaja watershed and any new water quality data that has been collected since those reports were written.
- (2) Create an approved EPA nine element watershed restoration plan for the 14.4 square mile watershed area. This plan will guide future restoration activities on Mill Creek and other impaired waters in the area.

As stated above, the 2002 NCDENR report previously mentioned sedimentation as a problem for Mill Creek, but sediment is not specifically cited as the current leading cause of impairment for the entire Upper Cullasaja watershed. Golf course impoundments, toxicity and temperature problems, as well as lack of suitable macroinvertebrate habitat, are specifically detailed as the chief causes of impairment. LTWA and its partners in this project are supportive of the Upper Cullasaja Watershed Association's (UCWA) efforts to implement a large-scale restoration at the Cullasaja Club that will begin to address some of these issues.

Specifically, UCWA proposes to address temperature and aquatic organism passage concerns by removing instream impoundments. They will also address toxicity from runoff of fertilizer and pesticides used in the management of the golf course greens at the Cullasaja Club by reducing the amount applied and restoring buffer areas. In support of this effort, LTWA has volunteered background biological monitoring data from its 21 year old biological monitoring program, directed by Dr. William O. McLarney, and has pledged to continue collecting these data over the life of the restoration effort (before, during, after). We have also participated in the fundraising effort for the project by writing letters of support on UCWA's CWMTP application and have offered to help identify other potential sources of funding. UCWA is, however, the leading organization negotiating the planned work and overseeing it, and since UCWA is focused on this effort they have elected not to be a partner in this planning effort beyond providing their prior data and reports. The development of the nine element watershed restoration plan is meant to further augment UCWA's work in the Upper Cullasaja watershed and to also provide both organizations with the opportunity to receive future funding from the 319 program for restoration project implementation. Combined, we feel that these projects will lace together the beginnings of a

holistic restoration plan for the Upper Cullasaja watershed that will benefit each of our organization's efforts to improve water quality and habitat in the Upper Cullasaja watershed and beyond in the Little Tennessee River valley.

Methods

(1) The Little Tennessee Watershed Association and Highlands Biological Station, in conjunction with their partners, will work in concert to hire a consultant and help collect relevant data to assist in the production of a watershed restoration plan. LTWA staff has committed to overseeing this phase of the project, editing the report, and coordinating its approval with DWQ staff (if appropriate). Together, the partners will work with the consultant to encourage significant public participation in this process through public meetings and surveys that will allow for comments before and during report completion.

(2) Ongoing monitoring of stream quality in terms of biological integrity, sedimentation and chemistry is planned through HBS and its programs, particularly with students of the Institute for the Environment at UNC-Chapel Hill. This project is fortunate in that it will begin with an excellent baseline survey of the condition of the watershed and its biotic elements. In 2008, a group of University of North Carolina-Chapel Hill environmental science students, in residence at the Highlands Biological Station each fall semester, undertook a baseline research project to investigate the cause and extent of damage to Mill Creek at the Highlands Biological Station. A copy of the 2008 baseline research paper can be downloaded at <http://www.wcu.edu/hbs/CEP.htm>. We plan to continue these surveys as an ongoing group research project in subsequent years of the course, held annually at the Highlands Biological Station through the Institute for the Environment at UNC-Chapel Hill. Combined with LTWA's past data and DWQ's past data, recommendations will be made for improvements throughout the watershed in the restoration plan. The UNC-Chapel Hill undergraduate research program is a long term program and will be critical in demonstrating the effectiveness of BMP installations and restoration activities as that occur in the future as a result of this planning effort.

1. Collect and evaluate past data for plan completion.

2. Conduct three meetings of project partners to plan, design, implement and monitor project over project period.

3. Conduct community outreach and involve the public in plan development through at least two meetings at HBS. Measure effectiveness of knowledge transfer about water quality problems using pre and post surveys with each group.

4. Complete a nine element watershed plan for the Upper Cullasaja watershed.

5. Receive approval from DWQ of the watershed plan.

Project Name:	NOT APPLICABLE (NA)	Project Website:	NOT APPLICABLE (NA)
Project Manager:	40846	Restoration Project Lead:	NOT APPLICABLE (NA)
Project ID/Project #:	13342	Phone:	828-524-1146
Project Address:	NOT APPLICABLE (NA)	Fax:	919-733-5083
Project Website:	NOT APPLICABLE (NA)		

Budget

Grant Summary

Project/Program/Activity	Total Available Funds (Initial Allocation)	Grant Funds Remaining:
\$0	\$4,681,749	\$4,681,749

Project Budget

Activity/Category	2010
Project/Program/Activity	\$0
Project/Program/Activity	\$0
Project/Program/Activity	\$16,125
Total 319(h) Funds for this project:	\$16,125
Project/Program/Activity	\$0
Project/Program/Activity	\$0
Project/Program/Activity	\$0
Project/Program/Activity	\$11,990
Project/Program/Activity	\$0
Project/Program/Activity	\$0
Project/Program/Activity	\$0
Total Budget:	\$28,115

Work Categories

Category of Work	Primary
Water Quality Management/Protection	
Watershed/Stream/Reach Education/Information Program	

Sources of NPS Pollution

Key Partners

Related Projects

Attachments

Attachment Name	File Size	Document Type
Screenshot of the user interface showing the login page.	10 KB	Image

Planning

Watershed Plans

Status	Plan Name	Attachment
	Upper Klamath Watershed Restoration Plan	

Project Status

Schedule ⁸

01/01/2011 06/30/2013

Waterbody Information

Pollutants to be Addressed

Planned Activities

Tasks

Project Evaluations

Environmental Results

Drainage Areas

Drainage Area Pollutants

Best Management Practices

Ecoregions

Ecoregion

Water Assets

Countries

County Name State

Waters

4. NPS Program Planning

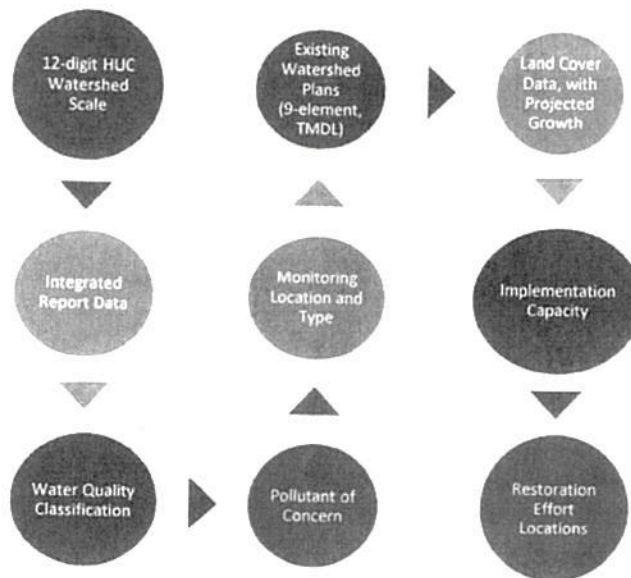
North Carolina recognizes the need to utilize an iterative process in implementing, evaluating, and adjusting our NPS Program to most efficiently and effectively manage program resources and ensure our water quality is protected and restored where needed. This adaptive approach recognizes the complex, challenging and fairly young nature of the NPS management field, and hence the need to plan for iterations of “learning by doing,” improving with each iteration based on results of the previous ones.

The various programs outlined in Sections II and III address different and sometimes multiple elements of the adaptive cycle. Many of the support programs identified in **Table 2** and described through Section II address the planning, funding, and evaluation elements, while programs in **Table 3** and Section III accomplish the implementation element.

5. Voluntary Watershed Restoration and Protection Prioritization Process

In 2013, North Carolina initiated a new approach to watershed restoration and protection by developing a GIS-based watershed prioritization tool. This tool allows the state to more efficiently target funds and Division efforts with watershed initiatives throughout the state. **Figure 1** provides a schematic of inputs for initial prioritization of watersheds across the state based on indicators of restorability to guide voluntary restoration efforts.

Figure 1. Watershed Restoration Prioritization Tool Input Elements

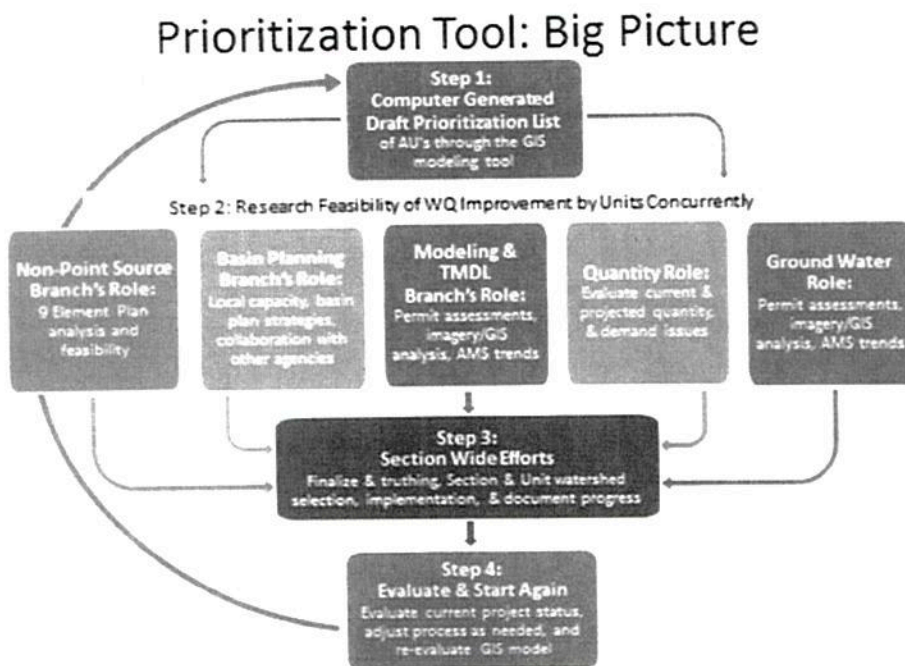


Watershed Restoration

The tool can be updated, and we expect to conduct periodic data runs to allow reassessment of priorities. The tool uses the 12-digit Hydrologic Unit (HUC) scale. The tool is designed for ranking of watersheds for any purpose by modifying the selection and weighting of data elements for that purpose. Available data layers include: 12-digit HUCs, water quality classification, biological factors, monitoring data, socio-economic factors, and land cover/impervious surface data to target areas for watershed scale work.

Now that the prioritization tool has been developed and a list of priority watersheds has been generated, the next step is to utilize regional office and DWR Water Planning Section staff to evaluate and ground truth the top priority watersheds to confirm feasibility of implementation efforts. The feedback provided during this step of the process will be used to refine the prioritization list and guide watershed restoration implementation. **Figure 2** below illustrates the steps of the watershed prioritization process and the roles of different branches of the Water Planning Section.

Figure 2. Watershed Restoration Prioritization Process



For the first 5-year plan in 2014, steps 1 and 2 of the above process were completed and an initial list of priority waters for restoration was generated by overlaying the priority waters list with existing GIS layer of 9-element watershed restoration plans and applying a local readiness filter to arrive at a ranked list of watersheds ready for implementation of existing management plans. This list was then divided into three tiers based on the following factors:

- Tier 1 Waters: Comprehensive and relevant Watershed Restoration Plans are in place and actively being implemented.
- Tier 2 Waters: Relevant Watershed Restoration Plans ready for implementation but currently not under contract. Plans are backed by local capacity, the Division is facilitating implementation.

- Tier 3 Waters: Watershed Restoration Plans exist but local capacity needs to be strengthened to fully implement them. Division staff will work with potential participants to build capacity.

This approach should serve as ongoing, revisable guidance for efficient use of implementation funds. Staff has updated the original tiered priorities list to reflect progress over the first 5-year period. Results are provided in **Table 5**, with all changes to the cycle 1 list shaded in **blue**. Noteworthy progress shown in **Table 5** includes: 5 new success stories restoring 9 segments at the top of Tier 1; 8 initiatives progressed from “completed plan” status to implementation, moving to Tier 1; 13 new initiatives have arisen – 6 are implementing plans (Tier 1) and another 6 have approved plans and are positioned to begin implementing; and at least 9 projects are being implemented entirely with state or local funds.

Table 5: Prioritized List of Watershed Restoration Plans

Tier 1

Plan Name	Partners	Status
Mud Creek, 2003 (French Broad)	Henderson County Cooperative Extension & SWCD; Conserving Carolina; NC Wildlife Resources Commission; USFWS; many others	Segment delisted for biology, 2016. Ongoing implementation – 319, other funds Success Story.
Dan River, 2012 (Roanoke)	NC Division of Soil and Water Conservation; Stokes, Rockingham, Caswell County SWCDs	Two segments delisted for fecal, 2012. Ongoing 319 implementation. Success Story.
Smith Creek - Warren County, 2008 (Roanoke)	NC Division of Soil and Water Conservation; Warren County SWCD	Elevated from Tier 2. Segment delisted for biology, 2016. Success Story.
Crowders Creek, 2008 (Catawba)	UNC Charlotte Civil & Environmental Engineering	New entry. Four segments delisted for fecal, biology, 2014. Ongoing implementation – local funds. Success Story.
Cullasaja River, 2010 (Little Tennessee)	Land Trust for the Little Tennessee River	Segment delisted for biology, 2012. Ongoing implementation – other funds. Success Story.
Franklin to Fontana, 2013 (Little Tennessee)	NC Division of Mitigation Services; NC Natural Heritage Program	Ongoing implementation - 319 project recently completed.
Valley River, 2008 (Hiwassee)	Hiwassee River Watershed Coalition	319 project recently completed.
Richland Creek, 2009 (French Broad)	Haywood Waterways Association	Ongoing implementation – shifted to state, local funds.
Ivy River, 2006 (French Broad)	Madison County SWCD	Elevated from Tier 2. 319 project underway.
Beaverdam Creek, 2010 (Watauga)	Watauga River Partners	Elevated from Tier 2. 319 project nearing completion.
McDowell Creek, 2008 (Catawba)	Town of Cornelius; Charlotte; Mecklenburg County Stormwater	Ongoing implementation - 319 project underway.
Little Sugar, 2003 (Catawba)	Charlotte Mecklenburg Stormwater; NC Division of Mitigation Services	Ongoing implementation - state and local funds.
Irwin Creek, 2003 (Catawba)	Charlotte Mecklenburg Stormwater; NC Division of Mitigation Services	Ongoing implementation - state and local funds.
Charlotte Area Plan, 2003 (Catawba)	Charlotte Mecklenburg Stormwater; NC Division of Mitigation Services	Ongoing implementation - state and local funds
Robeson Creek, 2011 (Cape Fear)	North Carolina State University – Water Quality Group, Biocenosis, Robeson Creek Watershed Council, Chatham Park	Ongoing implementation - shifted to private funds.
Third Fork Creek, 2012 (Cape Fear)	City of Durham; Durham SWCD	Ongoing implementation - Clean Water Trust Fund support.

Smith Creek, Wake Forest, 2014 (Neuse)	Town of Wake Forest	Ongoing implementation - 319 project underway.
Black Creek, 2005 (Neuse)	North Carolina State University WECO – Black Creek Watershed Association	Elevated from Tier 3. Ongoing 319-funded implementation.
Lick Creek, 2006 (Neuse)	Upper Neuse River Basin Association	Elevated from Tier 2. 319 project underway.
Ellerbe Creek, 2009 (Neuse)	Ellerbe Creek Watershed Association; NC Division of Mitigation Services	Elevated from Tier 3. 319 project beginning.
Lake Mattamuskeet, 2010 (Tar-Pamlico)	North Carolina Coastal Federation	Elevated from Tier 2. 319 project recently completed.
Bradley & Hewlett's Creek, 2009 (Cape Fear)	North Carolina Coastal Federation	Elevated from Tier 2. 319 project underway.
Lockwood's Folly, 2010 (White Oak)	North Carolina Coastal Federation	319 project recently completed.
Naked Creek (New)	New River Conservancy	New entry. 319 project underway.
North Toe (French Broad)	Blue Ridge RC&D	New entry. 319 project underway.
Mills River Source Water Prot'n /W'shed Restor'n (French Broad)	Mills River Partnership	New entry. 319 project underway.
Little Lick Creek (Neuse)	City of Durham	New entry. Implementing w/own funds.
Little River (Pasquotank)	Albemarle RC&D	New entry. 319 project underway.
Swansboro Watersheds (White Oak)	Town of Beaufort, Eastern Carolina Council, NC Coastal Federation	New entry. 319 project beginning.

Tier 2

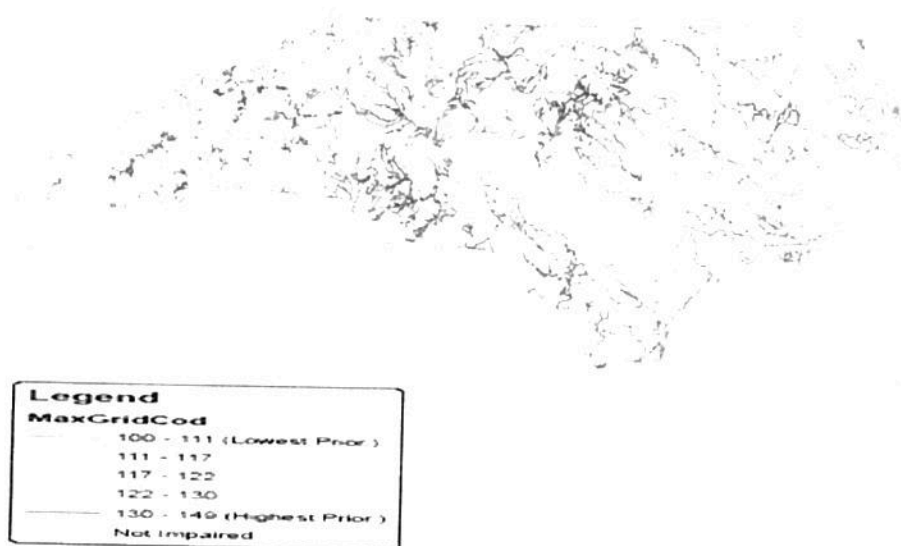
Plan Name	Partners	Status
East Fork New River (New)	New River Conservancy	New entry. Plan Developed
Middle Fork New River (New)	New River Conservancy	New entry. Plan Developed
Fines Creek (French Broad)	Lower Pidgeon River Watershed Restoration Group	New entry. Plan Developed
Greenfield Lake, 2016 (Cape Fear)	UNC Wilmington	New entry. Plan Developed
Beaufort Watersheds (White Oak)	Town of Beaufort, Eastern Carolina Council, NC Coastal Federation	New entry. Plan Developed
Pettiford Creek, 2005 (White Oak)	North Carolina Coastal Federation	New entry. Plan Developed
Corpening Creek, 2007 (French Broad)	Clean Water Management Trust Fund – Muddy Creek Partnership	Plan Developed
Ararat River, 2013 (Yadkin)	NC Division of Mitigation Services	Plan Developed
Bolin Creek, 2009 (Cape Fear)	Town of Chapel Hill, Carrboro	Plan Developed

Tier 3

Plan Name	Partners	Status
Bald Creek, 2016 (French Broad)	NC Division of Mitigation Services	New entry. Plan Developed
Newfound Creek, 2005 (French Broad)	Buncombe County SWCD	Plan Developed
Hunting Creek, 2008 (French Broad)	Clean Water Management Trust Fund; Muddy Creek Partnership	Plan Developed
Indians & Howards Creek, 2010 (Catawba)	NC Division of Mitigation Services	Plan Developed
Lake Rhodhiss, 2006 (Catawba)	Western Piedmont Council of Governments	Plan Developed
Lower Creek, 2008 (Catawba)	Caldwell, Burke County SWCDs	Plan Developed
Goose & Crooked Creeks, 2012 (Yadkin)	Union County; NC Division of Mitigation Services	Plan Developed
Lower Abbotts Creek, 2008 (Yadkin)	Piedmont Triangle Regional Commission	Plan Developed
Rocky River, 2009 (Yadkin)	Centralina Council of Governments	Plan Developed
Northeast Creek, 2005 (Cape Fear)	University of North Carolina Chapel Hill	Plan Developed
Little Alamance, Travis, Tickle, 2008 (Cape Fear)	NC Division of Mitigation Services	Plan Developed
Burnt Mill Creek, 2004 (Cape Fear)	City of Wilmington; North Carolina State University WECO	City of Wilmington continuing education & outreach

A map illustrating the list of prioritized waters for restoration is presented below as **Figure 3**. The highest priority waters show up as red on the map, lowest priority in green.

Figure 3. Priority Restoration Waters



The map in **Figure 4** below from the NPS Program's 319 web page shows only the highest priority impaired waters (red) along with the current set of approved 9-element watershed restoration plans as listed in **Table 5** above.

Figure 4. High Priority Impaired Waters and Watersheds with 319-Eligible Restoration Plans



Targeted Watershed Protection

In this second 5-year period, the Division is interested in developing a framework to promote targeted protection of water quality in unimpaired, healthy watersheds. An action is included for this interest in the Protection action plan in this section. A protection framework would support planning efforts of local partners and potentially facilitate the pursuit of funding incentives from various local, state and federal sources for protection activities. Basic prioritization criteria for protection would likely include protective designations on high-value waters such as state Outstanding Resource Waters, High Quality Waters, Trout Waters, and Water Supply Watershed designations, some element of threat or risk, and some metric of local readiness as done with restoration waters.

6. Implementation of Restoration and Protection Efforts

Implementation will follow the NPS Program action plans at the end of Section II. On the protection side, there are two aspects to protection: targeted watershed protection described above and ongoing statewide protection of water quality via the range of existing regulatory and other support programs that are supported in part by the 319 grant. For targeted protection, once a protection prioritization framework has been developed, it will be shared with Division leadership for consideration of potential uses before any plan is developed for engagement of local partners. Programmatic protection efforts continue and evolve as described in Section III of this Plan.

One subject that cuts across both protection and restoration interests is the NPS management implications of climate change. NPS Program staff will seek to evaluate this subject in the new 5-year cycle for

Attachments

Planning

Watershed Plans

Project Status

Status Type	Current Status	Status Date	Comment	Editor	Edited Date
Project	Not Initiated	09/01/2000		MIGRATED_Pendola	

Schedule

Project Start Date	09/01/2000	Project End Date	09/02/2000
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Go Back

Waterbody Information

Pollutants to be Addressed

Planned Activities

Tasks

Project Evaluations

Environmental Results

Drainage Areas

Drainage Area Pollutants

Best Management Practices

Ecoregions

Countries

Project Information

Project ID: 99465799

Project Name: CIGAR

Project Type: N

Approval Date: 09/01/1999

Project Status: 33

General Information

Project Description:

Project Name: Cullasaja River Project

Project Number: EW01016

Project Status:

Project Type:

Project Name:

N

Project Type: N

Project Number:

Project Status:

Project Name: 3305

Project Number:

Project Status:

Project Type:

Budget

Grant Summary:

Total Available Funds:

\$0

Total Total Funds:

\$3,968,900

Grant Funds Remaining:

\$3,968,900

Project Budget

Approval Date: 1999

Project Name: 3

Project Type: \$0

Project Status: \$210,000

Total 319(h) Funds for this project: \$210,000

Project Name: \$0

Project Type: \$0

Project Status: \$0

Project Name: \$0

Project Type: \$140,000

Project Status: \$0

Project Name: \$0

Project Type: \$350,000

Work Categories

Sources of NPS Pollution

Key Partners

Related Projects

Attachments

Planning

Watershed Plans *

Project Status

Status Type	Current Status	Status Date	Comment	Editor	Edited Date
Project	Not Initiated	07/06/2019		M. BRATER, PECC	07/06/2019

Schedule *

Event Name	Event Date	Event Status	Event Date
Project Start	09/01/2000	Completed	09/02/2000

Waterbody Information

Pollutants to be Addressed

Planned Activities

Tasks

Project Evaluations

Environmental Results

Drainage Areas *

Drainage Area Pollutants *

Best Management Practices *

Ecoregions

Counties

Project Information

Project ID: 99465799

Region: EM

State: TN

Funding Year: 1999

Funding: 33

General Information *

Project Name:

Project: Cullasaja River Project

Project Identification: EW01016

Project Manager:

Project Lead:

Project Status: N

Project Type: N

Project Description:

Project Milestones: 3305

Project:

Project Description:

Project:

Project Description:

Project Description:

Budget *

Grant Summary:

Grant Amount:

\$0

Grant Amount:

\$3,968,900

Grant Funds Remaining:

\$3,968,900

Project Budget *

Project Budget: 1999

Project Budget: 3

Project Budget: \$0

Project Budget: \$210,000

Total 319(h) Funds for this project: \$210,000

Project Budget: \$0

Project Budget: \$0

Project Budget: \$0

Project Budget: \$0

Project Budget: \$140,000

Project Budget: \$0

Project Budget: \$0

Total Budget: \$350,000

Work Categories *

Sources of NPS Pollution *

Key Partners

Related Projects

FY2010 319 Incremental Proposals

ID Base/ # Incr	Project Name	River Basin/ Watershed	Project Sponsor	Fed 319 Funds	Match	Total Funding	Project Description	Total Score (50 max)	Cumulative 319 funds requested	#
1	Jordan Lake Paired Watershed Study: Part II	Cape Fear RB, Upper Cape Fear, Lake	NCSU	\$168,745	\$114,238	\$282,983	Agriculture is an important land use in the Upper Cape Fear River Basin (Jordan Lake watershed). Like many river basins The North Mecklenburg Park Retrofit and Stream Restoration project will treat 5.3 acres of high traffic parking lots and	41.8	\$168,745	1
2	North Mecklenburg Park Retrofit and Stream Restoration	Galathea RB, McDowell WS	Charlotte/Me cklenburg Storm Water	\$155,740	\$103,826	\$259,566		41.5	\$324,485	2
3	Mud Creek Watershed Restoration Project	French Broad RB, Lewis Creek, Clear	Henderson County	\$255,681	\$207,131	\$462,812	Mud Creek, in Henderson County, NC, is a 303-d listed stream and has been identified by DWO as a watershed of	40.9	\$580,166	3
4	Dry Creek Watershed Restoration Project	Cape Fear, Dry Creek	Chatham SWCD	\$273,340	\$197,063	\$470,403	Dry Creek flows into the Haw River in northern Chatham County. From its headwaters in the west, near the Silk Hope area. Continued agricultural operations and an increased number of Yes. Despite the growing number of horse operations in North Carolina and the Falls Lake watershed in particular, funding for resource management/BMP	40.7	\$853,506	4
5	Best Management Practices and Education for Horse Livestock Operations in the Falls Lake Watershed	Neuse RB, Falls Lake	DSWC	\$157,400	\$173,803	\$331,203		39.8	\$1,010,906	5
6	Evaluation of biosolids application fields on surface- water nutrient and bacteria loads in tributaries to Cane Creek water-supply reservoir	Cape Fear RB, Cane Creek	USGS	\$293,000	\$202,347	\$495,347	The proposed study will take place in the watershed of Cane Creek Reservoir in Orange County, a tributary of the Haw River subbasin of the Cape Fear River. Cane Creek Reservoir is utilized for water	39.8	\$1,303,906	6
7	Implementing innovative street retrofits to reduce stormwater runoff volumes and pollutants in Burnt Mill Creek watershed		NCSU	\$224,889	\$150,177	\$375,066	Burnt Mill Creek is on North Carolina's 303(d) list from impacts of urban stormwater runoff, including toxic impacts from polycyclic aromatic hydrocarbons (PAHs). This project will continue	39.7	\$1,528,795	7
8	Valley River Restoration - Phase III	Hiwassee RB, Valley River	Hiwassee River Watershed	\$150,000	\$100,000	\$250,000	The Valley River is impaired by excess sedimentation, evidenced in turbidity violations at DWO's ambient water quality	39.1	\$1,678,795	8
9	Robeson Creek BMP Monitoring	Cape Fear RB, Robeson Creek	NCSU	\$169,386	\$124,638	\$294,024	The Robeson Creek Watershed is impaired for Total Phosphorus (TP) and Habitat Degradation. Since 2003,	38.5	\$1,848,181	9
10	Corpening Creek 9 Element Plan Implementation		Carolina Land and	\$249,056	\$185,119	\$434,175	The Muddy Creek Restoration Partners desire to implement the Corpening Creek	38.4	\$2,097,237	10
11	Mill Creek Restoration Project	Little Tenn RB, Upper Cullasaja	Little Tennessee Watershed	\$34,557	\$31,543	\$66,100	Mill Creek is a 303d listed tributary stream to the Upper Cullasaja River. Shortly before it reaches the Highlands	38.1	\$2,131,794	11
12	Beaverdam Creek Watershed Restoration Project	Watauga RB, Beaverdam Creek	Western North Carolina	\$247,500	\$162,750	\$410,250	The Beaverdam Creek (21 sq mi) watershed was recently listed on the 303(d) (2008 draft) list with reasons	38.1	\$2,379,294	12
13	Mattamuskeet Ventures Drainage District Hydrological Restoration	Tar Pam, Mattamuskeet	North Carolina Coastal Federation	\$70,032	\$47,776	\$117,808	The reduction of surface runoff to the Sound will enable large-scale oyster reef restoration work that is now impossible directly off Hyde County because of	38.0	\$2,449,326	13

FY2010 319 Incremental Proposals

ID Base/ # Incr	Project Name	River Basin/ Watershed	Project Sponsor	Fed 319 Funds	Match	Total Funding	Project Description	Total Score (50 max)	Cumulative 319 Funds requested	#
8	Watershed Improvements for a Cleaner Lake Rhodhiss (WCLRI)	Catawba RB, Lake Rhodhiss,	Burke Soil and Water Conservation	\$247,440	\$199,780	\$447,220	Burke County Soil and Water Conservation District is requesting \$247,440 for water quality improvement	36.9	\$2,656,766	14
13	Lockwood Folly Watershed Restoration Plan Implementation Project	Lumber RB, Lockwood Folly WS	North Carolina Coastal	\$164,538	\$109,709	\$274,247	The Lockwood Folly River watershed contains 840 acres of estuarine waters, 1,242 acres of coastal wetlands and	36.8	\$2,861,304	15
49	Davidson County Community College Water Sustainability	Yadkin RB, Abbotts Creek, Rich Fork	Piedmont Triad COG	\$359,784	\$248,192	\$607,976	The proposed project will develop a water sustainability plan for Davidson County Community College (DCCC), and	36.8	\$3,221,088	16
40	Deep River Headwaters Watershed Restoration Plan		Piedmont Triad COG	\$267,960	\$385,473	\$653,433	The Piedmont Triad Council of Governments (PTCOG) will produce a comprehensive watershed restoration plan based on the EPA's 9 Key Elements of Local Watershed Planning to identify	36.7	\$3,489,048	17
7	Caldwell County Headwaters of the Yadkin Restoration Plan	Yadkin RB, Upper Yadkin	Caldwell Soil and Water	\$181,773	\$164,353	\$346,126	Caldwell County Soil and Water Conservation District (SWCD) is	36.6	\$3,670,821	18
35	Watershed Outreach and Restoration Planning in the Upper Rocky River	Cape Fear RB, Upper Cape Fear	NCSU	\$228,802	\$154,359	\$383,161	The upper Rocky River watershed is impaired for chlorophyll a. In 2008, state water quality standards for turbidity and	36.5	\$3,899,623	19
2	Falls Lake Paired Pasture Watershed Study	Neuse RB, Falls Lake WS	NCSU	\$160,495	\$108,234	\$268,729	Falls Lake is a mixed landuse watershed, with large areas of forest, agricultural	36.5	\$4,060,118	20
61	Hunting Creek Watershed - Implementation of Best Management Practices	Catawba RB, Hunting Creek	Carolina Land and Lakes RC&D	\$115,000	\$46,000	\$161,000	The activities proposed in this project present a phased implementation approach to restoring water quality in	36.0	\$4,175,118	21
53	Analysis of NPS Pollution Contributions to Upper Neuse Watershed and Falls Lake	Neuse RB, Upper Neuse	NCSU	\$175,230	\$70,092	\$245,322	The NC Division of Water Quality (DWO) is currently developing a nutrient management strategy and Rules	35.3	\$4,350,348	22
33	Coddle Creek Watershed	Yadkin RB, Lower Coddle	City of Concord	\$15,925	\$11,000	\$26,925	Lower Coddle Creek is a 303(d) listed stream for impairments due to turbidity	35.2	\$4,366,273	23
63	Sources, Transformations and Impacts of Legacy Sediments in the Neuse River Basin: Implications for the Neuse TMDL	Neuse	NCSU	\$349,720	\$288,247	\$637,967	Our primary goal is to provide NC-DENR with a scientifically sound estimate of bioreactive DON loads for the NRE at time scales relevant to adaptive management of the TMDL. We propose	35.0	\$4,715,993	24
60	Failing Septic Systems	French Broad, Little Tenn	DEH-WADE	\$447,081	\$774,000	\$1,221,081	The NC Wastewater Discharge Elimination (WADE) Project mission is to identify and eliminate straight pipes and	34.2	\$5,163,074	25
19	Cane Creek Watershed Project	French Broad, Cane Creek	Buncombe County	\$360,707	\$1,538,514	\$1,899,221	Buncombe County Soil & Water Conservation District (SWCD) is	33.6	\$5,523,781	26
44	Upper Neuse / Swift Creek Watershed Restoration	Statewide		\$243,350	\$243,282	\$486,632	In support of the Swift Creek Local Watershed Plan and TMDL, the Neuse RIVERKEEPER® Foundation proposes to partner with local landowners and volunteers on a program of buffer	33.3	\$5,767,131	27

FY2010 319 Incremental Proposals

ID Base/ # Incr	Project Name	River Basin/ Watershed	Project Sponsor	Fed 319 Funds	Match	Total Funding	Project Description	Total Score (50 max)	Cumulative 319 funds requested	#
18	Cane Creek Watershed Plan and Dam Removal Project	French Broad, Cane Creek	Resource Institute, Inc.	\$224,500	\$149,667	\$374,167	Cane Creek, from its source to the confluence with the North Toe River, has been included on North Carolina's Draft 2010 303(d) list of impaired streams for	29.8	\$5,991,631	28
48	Hominy Swamp Creek WO Planning Project	Neuse RB, Hominy Creek	City of Wilson	\$112,500	\$75,000	\$187,500	The purpose of this planning effort is to identify distressed areas within the upper portions of Hominy Swamp Creek Watershed and identify and develop water quality/restoration projects that will remedy the existing problems and hopefully initiate a process that will	29.6	\$6,104,131	29

29 Incremental Proposals
\$1,822,000 Available

319	Match	Total
\$6,104,131	\$6,366,313	\$12,470,444

FY2010 319 Incremental Proposals

APVANOED

ID #	Project Name	Project Sponsor	Fed 319 Funds	Revised 319 Request	Award	Total Score (50 max)
1	Jordan Lake Paired Watershed Study: Part II	NCSU	\$168,745	\$163,745	\$163,745	41.8
5	North Mecklenburg Park Retrofit and Stream Restoration	Charlotte/Mecklenburg Storm Water Services	\$155,740	\$155,740	\$155,740	41.5
27	Mud Creek Watershed Restoration Project	Henderson County	\$255,681	\$255,681	\$255,681	40.9
57	Evaluation of biosolids application fields on surface-water nutrient and bacteria loads in tributaries to Cane Creek water-supply reservoir	USGS	\$293,000	\$293,000	\$293,000	39.8
16	Implementing innovative street retrofits to reduce stormwater runoff volumes and pollutants in Burnt Mill Creek watershed	NCSU	\$224,889	\$224,889	\$224,889	39.7
20	Valley River Restoration -- Phase III	Hiwassee River Watershed Coalition, Inc	\$150,000	\$150,000	\$150,000	39.1
42	Robeson Creek BMP Monitoring	NCSU	\$169,386	\$139,386	\$169,386	38.5
62	Mill Creek Restoration Project	Little Tennessee Watershed Association	\$34,557	\$34,557	\$16,125	38.1
26	Beaverdam Creek Watershed Restoration Project	Western North Carolina Alliance	\$247,500	\$227,880	\$247,500	38.1
17	Mattamuskeet Ventures Drainage District Hydrological Restoration	North Carolina Coastal Federation	\$70,032	\$65,632	\$70,032	38.0

Award Total \$1,746,098
Funds Remaining \$75,902

FORM SECTION 319(h) FY10 Grant Workplan
Prepared by North Carolina Department of
Environment and Natural Resources

I-8. Upper Cullasaja Watershed Restoration Planning

1. Project Title	Upper Cullasaja Watershed Restoration Planning
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2a. Grantee Primary Contact or Project Manager¹			
Name	Jenny Sanders		
Title	Executive Director		
Organization Name	Little Tennessee Watershed Association		
E-mail address	jsanders@ltwa.org		
Mailing Address	93 Church Street, Suite 214		
City	Franklin	State	NC Zip 28734
Telephone	828-369-6402	Fax Number	828-369-6441

¹ A one-page Statement of Qualifications must be attached to the end of this application form to confirm that anyone designing, installing, or monitoring the proposed project is qualified to do so. Include in the statement any past and/or ongoing 319 grant funded projects.

2b. Grantee Execution Address (where contract will be mailed for signature)			
Name	Jenny Sanders		
Title	Executive Director		
Organization Name	Little Tennessee watershed Association		
E-mail Address	jsanders@ltwa.org		
Mailing Address	93 Church Street, Suite 214		
City	Franklin	State	NC Zip 28734
Telephone	828-369-6402	Fax Number	828-369-6441
Federal Tax ID Number	56-2208725		

2c. Grantee Payment Address (where invoice payments will be mailed)			
Name	Jenny Sanders		
Title	Executive Director		
Organization Name	Little Tennessee watershed Association		
E-mail Address	jsanders@ltwa.org		
Mailing Address	93 Church Street, Suite 214		
City	Franklin	State	NC Zip 28734
Telephone	828-369-6402	Fax Number	828-369-6441

Statement of Qualifications

Robeson Creek Watershed Restoration Project Personnel

North Carolina State University Department of Biological & Agricultural Engineering

The following project team members have extensive experience with design, installation, maintenance, and monitoring of best management practices, including BMPs for construction site erosion and sediment control, urban stormwater control, agricultural and forestry runoff, and stream and wetland restoration:

Karen Hall, Extension Associate, Environmental Science

Dan Line, PE, Extension Specialist, Water Resources Engineering

Jean Spooner, PhD, Professor and Extension Specialist

David Penrose, Environmental Science

Jamie Blackwell, Extension Assistant, Environmental Science

Current and Recent Past 319-Funded Projects:

1. Robeson Creek Watershed Restoration 2007-2010
2. Town Lake Weed Control 2009-2012
3. Monitoring of Nutrient and Sediment Loading from Construction Sites. 2005-2007.
4. NPS Pollution Control Implementation for Water Quality. 2005.
5. Horse Manure and Pasture Management Education. 2003-2005.
6. Stormwater Wetlands in Asheville. 2004-2007.
7. Asheville Low Impact Development (LID) & Stormwater BMP Demonstrations. 2004-2007.
8. Designing BMPs to Comply with Phase II Stormwater Regulations. 2003-2005.
9. Bent Creek Stream Restoration and Stormwater Best Management Practices. 2003-2006.
10. Sediment Removal Demonstration and Evaluation for Mountain Streams. 2003-2004.
11. Robeson Creek Watershed Assessment and TMDL Implementation Plan. 2002-2006.
12. Demonstration of BMPs for Restoration of Coastal Plain Stream Systems. 2002-2005.
13. Restoration of Mountain Wetlands and Upper Yadkin Training Center. 2002-2005.
14. Minimizing Water Quality Impacts of Mountain Construction Projects. 2002-2004.
15. Comprehensive NPS Pollution Control Training Center. 2001-2004.
16. French Broad River Watershed Education Training Center. 2001-2004.
17. Watauga River Streambank and Riparian BMP Demonstration. 1998-2000.
18. South Fork Mitchell River Streambank and Pasture Management. 1998-2000.
19. Upper Neuse Urban Watersheds. 1997-2000.
20. Coastal Urban and Recreation BMP Demonstration Project. 1996-1999.
21. Long Creek National Monitoring Project. 1996-2001.
22. Devils Cradle and Flat Rock Creek Watershed. 1995-1997.
23. North Toe River Watershed Christmas Tree BMPs. 1995-1997.

319(h) Grant Funds Requested	\$16,125	4. Type of Funding Requested (check one)	Competitive Base	Restoration (Incremental)
				X
Match funds or in-kind Match Services	\$11,990	5. Type of Project (check one)	X	Development or implementation of a Watershed Restoration Plan
				Development or implementation of a TMDL
3. Total Project Cost	\$28,115			Innovative BMP Technology Demonstration
				Education/Technology Transfer
			Other: (please indicate)	

6. Do you propose to install BMPs or other ag management measures that would be eligible for NC Agricultural Cost Share Program (ACSP) funding? If Yes, please document that the demand for ACSP funding in your county exceeds the supply, prompting your application for a 319(h) grant.	
Yes	No X

7. General Goal of Project (Check all that apply)	Protect and/or Maintain Water Resource Quality	Restore Water Resource Quality	Educate	
	X		X	
8. Project Start Date	1/1/2011	Project End Date	12/31/2012	
9. Geographic Coverage	Statewide	Regional	Watershed	Site Specific
			X	

10. Project Location – Important to submit as completely as possible, especially the Lat/Long coordinates and 303(d) List Assessment Unit Number

River Basin	Little Tennessee Basin
Watershed(s)	Upper Cullasaja
Watershed size	3,840 acres
303(d) listed Stream	Yes X No
303(d) List Assessment Unit Number	2-21-3
HUC(s) (12 digit USGS Hydrologic Unit Codes)	06010202030010
County	Macon
USGS 7.5 minute topographic quadrangle map(s) in project area	Highlands
Position coordinates of project location	Latitude N 35° 03.204' Longitude W 83° 11.333'

11. NPS Pollution Sources to be addressed (Check all that apply)

	Agriculture		Waste Disposal (includes onsite systems)
	Construction		Hydrologic Modification
	Silviculture		Marina and Recreational Boating
X	Urban runoff/Stormwater		Groundwater Loading
	Resource Extraction		Natural Sources
	Habitat Modification (drainage/filling wetlands, streambank destabilization)		Other:

12. NPS Pollutants to be addressed (check all that apply)

	Excess Nitrogen		Pesticides
	Excess Phosphorus		Oil and grease
X	Sedimentation		Temperature
	Pathogens/Bacteria		pH
	Metals		Alterations
	Low dissolved oxygen		Other:

13. Estimate Load Reduction, if checked for excess nitrogen, excess phosphorus and/or sedimentation²	
# pounds of nitrogen saved from project implementation	Reference:
# pounds of phosphorus saved from project implementation	Reference:
# tons of soil saved from project implementation	Reference:
Load Reduction Model Used: STEPL, Region 5, L-THIA, Other	

² Providing a load reduction estimate is required for all BMP implementation projects, including demonstrations.

14. Do you intend for collected data to be used by DWQ for Use Support decisions?	
Yes	No X

15. Project Abstract (short concise summary of the project – DO NOT EXPAND SPACE PROVIDED)
<p>The Upper Cullasaja River forms in the Blue Ridge Mountains of Western North Carolina and is part of the Little Tennessee River basin. The 14.4 square mile watershed is contained in an area defined as the "Highlands Plateau," and begins at the confluence of four main streams: the Cullasaja River (303d listed), Mill Creek (303d listed), Big Creek and Monger Creek. Several past planning efforts to define problems and make recommendations for the restoration of this watershed have been completed. This project proposes to work with students from UNC Chapel Hill studying at the Highlands Biological Station to collect additional baseline data and to review, analyze, combine and update this information into an approved nine element watershed restoration plan.</p>

16. Funding Requested										
Budget Categories (itemize all categories)	Section 319				Non-Federal Match *				Total	Justification (Include detailed explanation for each budget line item)
	Year 1	Year 2	Year 3	Year 4	Year 1	Year 2	Year 3	Year 4		
Personnel/Salary Jenny Sanders (LTWA – 240 hrs at \$20/hr)	1264	2400	1600						5264	Planning Phase involves meetings with Town officials and consultants to correct the stormwater problems, obtain permits (if required) and coordinate partners. Also evaluating, hiring and managing consultant while assisting with watershed restoration plan development.
Sharon Willard (LTWA Bookkeeper – 60 hrs at \$11.00/hr)	110	330	220						660	Quarterly reporting to NC DENR and paying contractors.
HBS Students and Research Staff (190 hours at \$19/hr)					1140	1000	1470		3610	Monitoring and Educational Outreach, assist with watershed restoration planning
Fringe Benefits Jenny Sanders (LTWA – 7% of salary)	56	168	112						336	Director retirement and health insurance allowance.
Equipment Monitoring Equipment (HBS Computers, GIS, Macroinvertebrate, etc.)					300	250	100		650	HBS will provide equipment for continued monitoring throughout the watershed. Students will also assemble and summarize previously collected data to assist with nine element plan.

Travel LTWA - 15 trips @ 40 mi. RT x .50/mi.	100	100	100							300	Includes site visits, partner meetings, project management and implementation, and follow up monitoring site visits.
Watershed Science - 5 trips @ 40 mi RT x .50/mi.		100								100	Project oversight and making recommendations for further BMP installation (includes help assessing Sunset Rock Rd.)
Contractual Watershed Science (project oversight - 50 hrs at \$75/hr)				1500	1500	750				3750	Provide monitoring assistance, lead student driven effort to collect additional monitoring data and work with contractor on watershed plan.
Consultant (to be hired)	2000	4000	2000							8000	Gather current information to update water quality information and complete 9 element restoration plan.
Other Volunteer Monitoring Labor (LTWA -120 hours at \$19/hr.)				600	920	760				2280	Additional volunteer labor monitoring macroinvertebrates, stream visual assessment, and IBI.
Total Direct	3530	7098	4032	0	3540	3670	3080	0		24,950	
Indirect (max. 10% of direct costs, per 40 CFR 35.268)	353	709	403		500	1000	200			3165	Includes office expenses at LTWA, payroll expenses, office supplies, etc.
Annual Totals	3883	7807	4435	0	4040	4670	3280			28,115	
Grand Total		\$16,125				\$11,990				\$28,115	
% of Total Budget		57%				43%				100%	

17. Budget Summary (Combined federal and match funds)							
	BMP Implementation	Project Management	Education Training or Outreach	Monitoring	Technical Assistance	Other	Total
Personnel		5,924	1,805	1,805			9,534
Fringe Benefits		336					336
Supplies							
Equipment				650			650
Travel		150		200	50		400
Contractual				1,875	9,875		11,750
Operating Costs		1,055	1,055	1,055			3,165
Other				2,280			2,280
Total		7,465	2,860	7,865	9,925		28,115

18. Local and State Match (non-federal) Summary	
Total Match amount	\$11,990
Cash Match	\$1,700
In-kind Match	\$10,290
Source(s) of Cash Match	LTWA- Private Foundation Cash Match for operating expenses and staff salaries.
Source(s) of In-kind Match	Non-Profit Partner Organizations- Volunteer Labor to help remove stone, replant and monitor restoration site. Highlands Biological Station – Students and staff contributing time to monitor during watershed planning process and also to create public outreach materials (reports, etc.) Watershed Science Inc. – donating time and travel to help design restoration plan and oversee student monitoring planning process. Also highly skilled in macroinvertebrate collection and identification.

19. Project Partners (may add more, if needed)³			
Agency Name	Little Tennessee Watershed Association		
Agency Address	93 Church St., Ste. 214, Franklin, NC 28734		
Role/contribution to Project	Submitting organization, will oversee and direct proposed activities in conjunction with partners		
Contact Person	Jenny Sanders	Phone No.	828-369-6402
E-mail address	jsanders@ltwa.org		
Agency Name	Highlands Biological Foundation, Inc.		
Agency Address	265 N. Sixth St. Highlands, NC 28741		
Role/contribution to Project	Partner in project planning, monitoring before and after project, and in building relationships with the public and landowners in Highlands. Will also provide student research support for ongoing monitoring efforts.		
Contact Person	Anya Hinkle	Phone No.	828-526-2602
E-mail address	ahinkle@email.wcu.edu		
Agency Name	University of North Carolina-Chapel Hill, Institute for the Environment		
Agency Address	337 Rosemary St., CB 1105, Chapel Hill, NC 27599-1105		
Role/contribution to Project	Institute program staff and students will provide equipment and research support for monitoring efforts		
Contact Person	Greg Gangi	Phone No.	919-966-9922
E-mail address	ggangi@email.unc.edu		
Agency Name	Watershed Science, Inc.		
Agency Address	35 Nash Hill Drive, Franklin, NC 28734		
Role/contribution to Project	Consultant for monitoring efforts, assistance teaching students about watershed planning, will assist consultant with final report production.		
Contact Person	Steve Foster	Phone No.	828-342-2297
E-mail address	steve_foster@ncwatersheds.com		

³ A one-page Statement of Qualifications must accompany applications to confirm that anyone designing, installing, or monitoring the proposed project is qualified to do so. Include in the statement any past and/or ongoing 319 grant funded projects.

20. Project Milestone Schedule

Time Period/Date	Activities (List specific quantifiable outputs or activities that will be achieved during each quarter)	Anticipated % of Requested Funding Spent ¹
First Quarter Jan-Mar 2011	Initial partner outreach to get the project started and assign tasks. Initialize media outreach plan to pique public interest. Create RFP to hire consultant that will develop watershed restoration plan with assistance from LTWA and HBS.	\$941.50 (6% this qtr, 6% overall)
Second Quarter Apr-June 2011	Hire consultant to assist with watershed restoration plan activities. Baseline monitoring to continue at LTWA.	\$2941.50 (18% this qtr, 24% overall)
Third Quarter July-Sept 2011	Begin monitoring activities with students from HBS. Continue working on watershed restoration plan with consultant. Hold a series of public meetings for stakeholder input.	\$1951.75 (12% this qtr, 36% overall)
Fourth Quarter Oct-Dec 2011	Complete first draft of watershed restoration plan and begin review and editing process.	\$1951.75 (12 % this qtr, 48% overall)
Fifth Quarter Jan-Mar 2012	Continued review and editing of watershed restoration plan. Hold public meeting to review plan, provide to partners for feedback.	\$1951.75 (12% this qtr, 60% overall)
Sixth Quarter Apr-Jun 2012	Continue 2 nd year of monitoring activities. Complete final review of nine element watershed restoration plan and submit for approval.	\$1951.75 (12% this qtr, 72% overall)
Seventh Quarter July-Sept 2012	Complete press release and newsletter article highlighting project. Revise if necessary for approval.	\$2217.50 (14% this qtr, 86% overall)
Eighth Quarter Oct-Dec 2012	Final production of approved nine element restoration plan. Provide partner organizations with press release information for individual newsletter publication. Distribute final restoration plan to public and partners.	\$2217.50 (14% this qtr, 100% overall)

¹ Please show anticipated dollar amount, percent of grant spent that quarter, and cumulative percent of grant spent for project. Quarterly invoices will only be reimbursed up to percent indicated. Unused funds will carry forward to next quarter.

² 10% of grant will be held until receipt of Final Project Report

Note: Sum of funds spent in quarters 1-2 MUST equal year 1 total in Budget Table #16
Sum of funds spent in quarters 3-6 MUST equal year 2 total in Budget Table #16
Sum of funds spent in quarters 7-8 MUST equal year 3 total in Budget Table #16

21. Background and goals of the project. Expand space, if necessary

The Upper Cullasaja River forms in the Blue Ridge Mountains of Western North Carolina and is part of the Little Tennessee River basin. The 14.4 square mile watershed is contained in an area defined as the "Highlands Plateau," and begins at the confluence of four main streams: the Cullasaja River, Mill Creek, Big Creek and Monger Creek. The Upper Cullasaja River watershed is compromised due to development in and around the town of Highlands, North Carolina (Fig. 1).

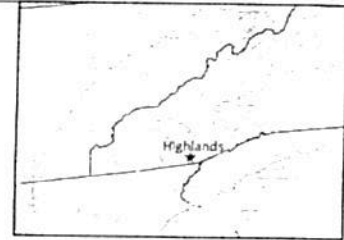


Fig. 1. Highlands, NC.

Highlands is situated in a temperate rainforest and is a biodiversity hotspot due to its high annual rainfall and unique geographical location at the southern terminus of the Appalachian mountain chain. The Highlands Plateau boasts spectacular diversity in a number of taxonomic groups, particularly aquatic animals.

Mountainous headwater streams, such as Mill Creek, constitute the primary breeding habitat for aquatic and semi-aquatic salamanders such as Seal (*Desmognathus monticola*), Ocoee (*D. ocoee*), Blackbelly (*D. quadramaculatus*), Two-lined (*Eurycea cirrigera*), Spring (*Gurionophilus porphyriticus*), and Red (*Pseudotriton ruber*) salamanders. These habitats provide slow-moving and shallow water with the detritus food web and stream-to-land interface that are required by these species to deposit their eggs. In addition, aquatic invertebrate fauna in these headwater reaches emerge as important sources of food for insectivorous avifauna and fish, critical in supporting the rich diversity of these species that are found on the Highlands Plateau.

Historically, sedimentation from poorly controlled stormwater runoff carrying loose material from roads, roadsides, construction sites and other disturbed areas has been a leading cause of impairment in the watershed, although according to a 2002 watershed study [<http://h2o.enr.state.nc.us/swpu/cullasaja/ucfinal.pdf>] completed by the North Carolina Department of Environment and Natural Resources Division of Water Quality (DWQ), this is just one of several factors causing impairment of Mill Creek and the Cullasaja River, both 303(d) listed streams in the project area. According to a 2004 report completed by the Upper Cullasaja Watershed Association (UCWA), The Upper Cullasaja river at US 64 has a bioclassification of fair, which earned it listing on the state's 303d list for impaired water bodies.

Specifically, Mill Creek is impaired for biological integrity because it is "unable to support acceptable communities of aquatic organisms" (NCDENR 2002). The Cullasaja River was listed in the early 1990's because of Poor and Fair benthic macroinvertebrate classifications (NCDENR 2002). This proposal will utilize the talents and resources of its partners to update the information contained in the 2002 DWQ watershed study and the 2004 UCWA Strategy and Action Plan to assist in the creation of an approved nine element watershed restoration plan for the entire 14.4 square mile area of the Upper Cullasaja watershed. We hope that by creating a thorough watershed restoration plan, LTWA and its partner organizations working in the area will be in a good position to prioritize and systematically complete future restoration projects that will improve water quality in the Upper Cullasaja watershed. We also intend to use this plan to influence future planning and development activities to avoid additional adverse impacts on the resource.

Through numerous monitoring efforts spanning the last 20 years, we are fortunate to have a solid collection of baseline data to assist with this project. For example, Mill Creek had previously been utilized as an educational area for salamander and aquatic invertebrate collection, so baseline studies in 2006 and 2008 exist (Purvis 2006, Brannon and Purvis 2008, Bost et al. 2008). Historical data has also been collected by the Department of Environment and Natural resources Division of Water Quality.

Through its Biomonitoring Program the Little Tennessee Watershed Association has been monitoring Big Creek and Mill Creek regularly for fish community assessments (IBI) and benthic macroinvertebrates. This will continue into the future to document recovery from any restoration work that is completed as a result of the watershed restoration plan. Likewise, the Highlands Biological Station will continue to host UNC Chapel Hill undergraduate students that will continue to monitor salamander populations and benthic macroinvertebrate population recovery after this project is completed. Beginning in 2010, HBS students are planning and implementing a watershed-wide monitoring effort in anticipation of the nine element watershed plan being created.

If received, funding from this proposal will be used to accomplish the following activities:

- (1) Hire a consultant to work with LTWA and HBS to collect new baseline data and assemble relevant past studies of the Upper Cullasaja watershed and any new water quality data that has been collected since those reports were written.
- (2) Create an approved EPA nine element watershed restoration plan for the 14.4 square mile watershed area. This plan will guide future restoration activities on Mill Creek and other impaired waters in the area.

As stated above, the 2002 NCDENR report previously mentioned sedimentation as a problem for Mill Creek, but sediment is not specifically cited as the current leading cause of impairment for the entire Upper Cullasaja watershed. Golf course impoundments, toxicity and temperature problems, as well as lack of suitable macroinvertebrate habitat, are specifically detailed as the chief causes of impairment. LTWA and its partners in this project are supportive of the Upper Cullasaja Watershed Association's (UCWA) efforts to implement a large-scale restoration at the Cullasaja Club that will begin to address some of these issues.

Specifically, UCWA proposes to address temperature and aquatic organism passage concerns by removing instream impoundments. They will also address toxicity from runoff of fertilizer and pesticides used in the management of the golf course greens at the Cullasaja Club by reducing the amount applied and restoring buffer areas. In support of this effort, LTWA has volunteered background biological monitoring data from its 21 year old biological monitoring program, directed by Dr. William O. McLarney, and has pledged to continue collecting these data over the life of the restoration effort (before, during, after). We have also participated in the fundraising effort for the project by writing letters of support on UCWA's CWMTF application and have offered to help identify other potential sources of funding. UCWA is, however, the leading organization negotiating the planned work and overseeing it, and since UCWA is focused on this effort they have elected not to be a partner in this planning effort beyond providing their prior data and reports. The development of the nine element watershed restoration plan is meant to further augment UCWA's work in the Upper Cullasaja watershed and to also provide both organizations with the opportunity to receive future funding from the 319 program for restoration project implementation. Combined, we feel that these projects will lace together the beginnings of a holistic restoration plan for the Upper Cullasaja watershed that will benefit each of our organization's efforts to improve water quality and habitat in the Upper Cullasaja watershed and beyond in the Little Tennessee River valley.

22. A detailed description of the project. Note: if project entails developing or implementing a Watershed Restoration Plan, see section 27. Expand space, if necessary

- (1) The Little Tennessee Watershed Association and Highlands Biological Station, in conjunction with their partners, will work in concert to hire a consultant and help collect relevant data to assist in the production of a watershed restoration plan. LTWA staff has committed to overseeing this phase of the project, editing the report, and coordinating its approval with DWQ staff (if appropriate). Together, the partners will work with the consultant to encourage significant public participation in this process through public meetings and surveys that will allow for comments before and during report completion.
- (2) Ongoing monitoring of stream quality in terms of biological integrity, sedimentation and chemistry is planned through HBS and its programs, particularly with students of the Institute for the Environment at UNC-Chapel Hill.

23. Monitoring/Environmental Data Collection Describe in section below how project data will be used (i.e. demonstrate effectiveness of BMPs installed, calculate load reductions, data to be used for TMDL development, data to be used for State use support purposes, etc.). If monitoring is needed to document a demonstration project or water quality improvement, a Quality Assurance Project Plan (QAPP) will be required (reviewed and approved by DWQ). For a QAPP template, visit the 319 Program website at http://h2o.enr.state.nc.us/nps/Section_319_Grant_Program.htm.

This project is fortunate in that it will begin with an excellent baseline survey of the condition of the watershed and its biotic elements. In 2008, a group of University of North Carolina-Chapel Hill environmental science students, in residence at the Highlands Biological Station each fall semester, undertook a baseline research project to investigate the cause and extent of damage to Mill Creek at the Highlands Biological Station. A copy of the 2008 baseline research paper can be downloaded at <http://www.wcu.edu/hbs/CEP.htm>. We plan to continue these surveys as an ongoing group research project in subsequent years of the course, held annually at the Highlands Biological Station through the Institute for the Environment at UNC-Chapel Hill. Combined with LTWA's past data and DWQ's past data, recommendations will be made for improvements throughout the watershed in the restoration plan. The UNC-Chapel Hill undergraduate research program is a long term program and will be critical in demonstrating the effectiveness of BMP installations and restoration activities as that occur in the future as a result of this planning effort.

24. Public Involvement

As stated previously, significant public involvement will be encouraged throughout the watershed restoration planning process through public meetings and surveys (made available in writing at meetings and online) coordinated by the project partners and a hired consultant. This includes comment opportunities before, during and after report completion.

We feel that involvement of Highlands residents is critical, not only to create this plan, but also to increase awareness of water quality issues and how residents can prevent problems from occurring in the future.

If funding for this work is received, project partners plan to advertise receipt of the award and details about the project through individual organizational newsletters and press releases. As the project progresses, newsletter articles will continue and the public participation process of the watershed plan will involve the public. After the project is completed, individual organizations will again continue to highlight the accomplishment in membership newsletters and a public and press visitation day to tour the restoration site will be arranged.

25. Project Measures of Success or "Measurable Results Anticipated from the Project"

1. Collect and evaluate past data for plan completion.
2. Conduct three meetings of project partners to plan, design, implement and monitor project over project period
3. Conduct community outreach and involve the public in plan development through at least two meetings at HBS. Measure effectiveness of knowledge transfer about water quality problems using pre and post surveys with each group.
4. Complete a nine element watershed plan for the Upper Cullasaja watershed.
5. Receive approval from DWQ of the watershed plan.

26. List Project Outputs and Products (All 319 funded projects are required to submit Quarterly Progress Reports and a detailed Final Project Report, which must be submitted at least *30 days before* the end of the contract for DWQ review and approval.)

1. Completed and approved nine element watershed restoration Plan
2. Increased outreach programming at HBS through public involvement
3. Quarterly and Final Reports to DWQ

27. Projects Developing or Implementing a Watershed Restoration Plan must include EPA's 9 Key Elements for Watershed Restoration Plans. Draft Plans must be submitted to DWQ for review and approval at least *60 days before* end of the project/contract period.

NOTE: Please provide information on the following ONLY if applying for Incremental funds to develop or implement a Watershed Restoration Plan: (use additional pages if necessary)

1	An identification of the causes and sources or groups of similar sources that will need to be controlled to achieve the load reductions estimated in the watershed The 2002 DWQ Upper Cullasaja Watershed Assessment document sections 3.1.2, 4.2.2, 5.4, and 7.2.2 address this issue. Further information will be collected from more recent reports (if available) in the watershed restoration plan process as proposed in this application.
2	A description of the NPS management measures that will need to be implemented to achieve load reductions as well as to achieve other watershed goals identified in the watershed based plan See sections 8.1.2- 8.4 of the 2002 DWQ Assessment provide detailed suggestions to achieve watershed goals laid out in sections 7.1.4 and 7.2.2. See also section 1.3.2 of DWQ 2006 Basinwide Water Quality Plan.
3	An estimate of the load reductions expected for the management measures Stream is impaired for biological integrity. Thus, there is no specific pollutant of concern. Thus, it is NOT necessary to complete this section at this point in time. Through continued work in the watershed if it is determined that sediment for example is a pollutant of concern, then load reductions can be calculated for that.
4	An estimate of the amount of technical and financial assistance needed associated costs and or sources and authorities that will be relied upon, to implement the plan Section 8.1.2 of the DWQ 2002 plan addresses this point, but further information will likely be gathered in the Watershed Planning Process proposed here.
5	An information/education component that will be used to enhance public understanding of the project Current proposed education activities at the HBS will be used to enhance public education in addition to partner contributions (outlined in #24 above).
6	A schedule for implementing the NPS management measures identified in this plan that is reasonably expeditious The current project outlines a two year process of developing a restoration plan. Once the final restoration plan is approved that addresses other contributing factors causing impairment of the Upper Cullasaja Watershed, we expect this timetable to expend, depending on any new information collected in updating the current concerns and recommendations.
7	A description of interim, measurable milestones for determining whether NPS management measures or other control actions are being implemented Current proposed milestone table in this document is a starting point to measure implementation of recommendations. Other measures are included in the 2002 DWQ watershed assessment, sections 8.1.2 and 8.2.
8	A set of criteria that can be used to determine whether loading reductions are being

	<p>achieved overtime and substantial progress is being made towards attaining water quality standards</p> <p>N/A</p>
9	<p>A monitoring component to evaluate the effectiveness of the implementation efforts over time measured against the criteria established under item 8.</p> <p>Current proposed activities by the HBS and LTWA to measure progress through IBI sampling, salamander and macroinvertebrate monitoring will continue as proposed above. HBS has also committed to purchasing equipment to monitor turbidity and conductivity regularly though this process with its students as a means of documenting baseline data and data that can eventually help augment biological data evaluating the effectiveness of the proposed actions. Once the restoration plan developed through this project is complete, additional monitoring components may be identified.</p>

28. References and Literature Cited

Assessment Report: Biological Impairment in the Upper Cullasaja River Watershed, Little Tennessee River Basin, Macon County, N.C. November 2002. North Carolina Department of Environment and Natural Resources, Division of Water Quality Planning Branch.

Purvis, B. A. 2006. Urbanization of a headwater stream and its impact of the abundance of aquatic salamanders. 2006 Institute for the Environment Highlands Field Site Internship and Capstone Research Reports [<http://www.wcu.edu/hbs/CEP.htm>].

Bost, D. M., et al. 2008. Crushed stone deposition: an analysis of sedimentation and stream health. 2008 Institute for the Environment Highlands Field Site Internship and Capstone Research Reports [<http://www.wcu.edu/hbs/CEP.htm>].

Brannon, M. P. and Purvis, B. A. 2008. Effects of sedimentation on the diversity of salamanders in a southern Appalachian headwater stream. *Journal of the North Carolina Academy of Science* 124(1):18-22.

Upper Cullasaja River Watershed Strategy and Action Plan, 2004. Upper Cullasaja Watershed Association.

Qualifications Statement

- **The Little Tennessee Watershed Association** – A non-profit organization whose mission is to protect and restore the Little Tennessee River and its tributaries through monitoring, education, habitat restoration and citizen action. Jenny Sanders has been the director of the Little Tennessee Watershed Association (LTWA) for three years and has been working in environmental conservation for six years; mainly in water quality monitoring and assessment, habitat restoration and public outreach initiatives. LTWA's Board of Directors has extensive experience in engineering, construction, urban planning, hydrology and education.
- **Highlands Biological Foundation, Inc.** – This organization was established 1927 to support research and educational activities at the Highlands Biological Station. It is a 501(c)(3) non-profit membership organization provides scholarships, salaries, infrastructure, and supplies for the Highlands Biological Station, Nature Center, and Botanical Garden. Its legacy of service to the citizens of Highlands and the scientific community to advocate for conservation education and action is unparalleled in the region. Its 30-member Board of Trustees includes many prominent community members who have the contacts and resources to raise community awareness around local environmental problems.
- **The Highlands Biological Station** – The Station is a center of the University of North Carolina system and is the staging ground for a broad range of educational and research activities focused on biodiversity and conservation of the Highlands Plateau. In addition to over 80 years of science education and recreation on its grounds, it also provides facilities for research (dorms, labs, etc) that over eight decades has produced an impressive list of peer-reviewed books, scientific papers, theses, and dissertations. One program that the Station hosts is the semester-long environmental science course for Institute for the Environment students of the University of North Carolina at Chapel Hill. The students in this annual course have and will continue to provide much of the research and monitoring for the proposed project. Its executive director, James T. Costa, is a professor at Western Carolina University, with a Ph.D. from the University of Georgia in Entomology. Associate Director Anya Hinkle has a Ph.D. from the University of California at Berkeley in Botany and is an adjunct faculty member at the University of North Carolina at Chapel Hill.
- **The University of North Carolina at Chapel Hill (Institute for the Environment)** – The Institute for the Environment is an institute within UNC-Chapel Hill with faculty and programs that focus on environmental issues and problem solving. The Highlands Biological Station serves as a field site for the Institute and hosts upper-level undergraduates each fall to study environmental science at their facility. The resources and staff of the Institute bring significant expertise and research potential to the area that provide the foundation for addressing environmental problems in the Highlands area. The Station's directors also serve as UNC faculty; the program's budget includes equipment necessary for research (GPS units, ArcGIS software, turbidity meters, equipment for chemical analysis, pH meters, and other resources). Lastly, the Institute regularly reports to the public on the activities at the field sites, providing significant administrative support in terms of press and community outreach.
- **Watershed Science (Steve Foster)** – Steve Foster has over 25 years of experience in the field of water quality including stream and wetland assessment, environmental restoration, and project management. Concurrent with the founding of Watershed Science, Steve served for four years with the Biological and Agricultural Engineering Department of NC State University working on a variety of stream restoration and assessment projects and performed watershed planning work for EarthTech. Prior to moving to North Carolina, Steve was employed as an Environmental Scientist with the Alabama Department of Environmental Management, performing a variety of roles in water resources management, including: NPDES, Stormwater, Nonpoint Source management, Section 401 administration, and complaint resolution. While at ADEM, he was project manager for numerous long-term watershed projects incorporating assessment, planning and the implementation of NPS control measures including stream and wetland restoration. Steve spent the fall of 2008 sharing his knowledge with students from the Station's UNC course who were studying the impacted Mill Creek watershed and helped produce a report with important baseline data for restoration activities to be compared with.

Upper Cullasaja Watershed Restoration Planning

Grant #:	C9994657-10	Project Area:	Mountain
Contractor:	Land Trust for Little Tennessee River	Contractor Phone Number:	(828) 369-6402
Project PI:	Jason Meador	PI Email Address:	jmeador@ltrl.org
Contract #:	3636	NC Basin:	Little Tennessee
NPS Category:	Watershed Restoration	Subbasin:	Upper Cullasaja
Project Duration:	Jan 2011 – Jun 2013	HUC-14:	06010202030010

FUNDING		
Total EPA Grant: Cash	\$16,125.00	
Match:	\$11,990.00	
TOTAL FUNDING		\$28,115.00
EXPENDITURES		
Expenditures of EPA Funds	\$16,125.00	
Other Expenditures	\$47,981.00	
TOTAL EXPENDITURES		\$63,106.00

Project Purpose:

The Upper Cullasaja River forms in the Blue Ridge Mountains of Western North Carolina and is part of the Little Tennessee River basin. The 14.4 square mile watershed is contained in an area defined as the "Highlands Plateau," and begins at the confluence of four main streams: the Cullasaja River (303d listed), Mill Creek (303d listed), Big Creek and Monger Creek. Several past planning efforts to define problems and make recommendations for the restoration of this watershed have been completed. This project proposes to work with students from UNC Chapel Hill studying at the Highlands Biological Station to collect additional baseline data and to review, analyze, combine and update this information into an approved nine element watershed restoration plan.

Project Outputs:

1. Completed and approved nine element watershed restoration Plan

Status: Completed. The nine element watershed restoration plan can be downloaded directly from the NC Division of Water Resources website: <http://portal.ncdenr.org/web/wq/ps/nps/319program/nc-watershed-plans>

2. Increased outreach programming at HBS through public involvement

Status: Completed. Public meetings were held in July 2012 about the watershed restoration work in the Upper Cullasaja. There was also a series of stakeholder meetings held during the watershed restoration plan process.

3. Quarterly and Final Reports to DWQ

Status: Completed and submitted as required.

See Attached Final Report

Upper Cullasaja Watershed Restoration Planning

Contract No.: 3636

FY10

June 2013

Prepared by:



Land Trust for the Little Tennessee

Acknowledgements

This project was funded under an EPA Section 319 Grant. LTLT would like to recognize Steve Foster and HBS for their donated in-kind services. We would also like to thank our partners UCWA, J-MCA, and the Town of Highlands for their input. Last, but not least, we would like to acknowledge the concerned citizens who participated by voicing their concerns for their watershed both at the public meeting and during the comment period.

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List of Tables, Figures, and Abbreviations

BMP – Best management practice

DWQ – North Carolina Division of Water Quality

HBS – Highlands Biological Station

J-MCA - Jackson-Macon Conservation Alliance

LTLT – Land Trust for the Little Tennessee

TMDL – Total maximum daily load

UCWA – Upper Cullasaja Watershed Association

Executive Summary

The Upper Cullasaja River forms in the Blue Ridge Mountains of Western North Carolina and is part of the Little Tennessee River basin. The 14.4 square mile watershed is contained in an area defined as the "Highlands Plateau," and is comprised of four predominant streams: the Cullasaja River, Mill Creek, Big Creek, and Monger Creek.

Historically, sedimentation from poorly controlled stormwater runoff carrying loose material from roads, construction sites, and other disturbed areas has been a leading cause of impairment in the watershed, although this is just one of several factors causing impairment of Mill Creek and the Cullasaja River, both 303(d) listed streams in the project area. Specifically, the Cullasaja River has a bioclassification of fair and Mill Creek is impaired for biological integrity because it is "unable to support acceptable communities of aquatic organisms."

This project utilized the resources contained in the 2002 DWQ watershed study and the 2004 UCWA Strategy and Action Plan to assist in the creation of an approved nine element watershed restoration plan. The intentions of the plan will be to systematically complete future restoration projects to improve water quality and influence future development activities to avoid additional adverse impacts on the resource.

We encouraged significant public involvement throughout the planning process through press releases, public meetings, and public comment periods before, during and after report completion. Ultimately, the final product is a comprehensive 68-page nine element watershed plan. The strategies outlined in the plan included new and expanded biological and chemical monitoring systems, implementation of more effective BMPs for mountainside slopes and small streams, innovative regulations and incentives for water quality improvements, and measurable criteria for project improvement. Also included were public education and awareness efforts, habitat restoration and preservation.

The project was completed using feedback from stakeholders, including groups such as HBS, J-MCA, the Town of Highlands, and UCWA. Having local stakeholder support and participation is essential for the success to any plan.

1. Introduction/Background

The Upper Cullasaja River forms in the Blue Ridge Mountains of Western North Carolina and is part of the Little Tennessee River basin. The 14.4 square mile watershed is contained in an area defined as the "Highlands Plateau," and begins at the confluence of four main streams: the Cullasaja River, Mill Creek, Big Creek, and Monger Creek. The Upper Cullasaja River watershed is compromised due to development in and around the town of Highlands, North Carolina.

Highlands is situated in a temperate rainforest and is a biodiversity hotspot due to its high annual rainfall and unique geographical location at the southern terminus of the Appalachian mountain chain. The highlands Plateau boasts spectacular diversity in a number of taxonomic groups, particularly aquatic animals. Mountainous headwater streams, such as Mill Creek, constitute the primary breeding habitat for aquatic and semi-aquatic salamanders such as seal (*Desmognathus monicola*), Ocoee (*D. ocoee*), blackbelly (*D. quadramaculatus*), two-lined (*Eurycea cirrigera*), spring (*Gurionophilus porphyriticus*) and red (*Pseudotriton ruber*) salamanders. These habitats provide slow-moving and shallow water with the detritus food web and stream-to-land interface that are required by these species to deposit their eggs. In addition, aquatic invertebrate fauna in these headwater reaches emerge as important sources of food for insectivorous avifauna and fish, critical in supporting the rich diversity of these species that are found on the Highlands Plateau.

Historically, sedimentation from poorly controlled stormwater runoff carrying loose material from roads, construction sites and other disturbed areas has been a leading cause of impairment in the watershed, although according to a 2002 watershed study completed by the North Carolina Department of Environment and Natural Resources DWQ, this is just one of several factors causing impairment of Mill Creek and the Cullasaja River, both 303(d) listed streams in the project area. The 2002 NCDENR report previously mentioned sedimentation as a problem for Mill Creek, but sediment is not specifically cited as the current leading cause of impairment for the entire Upper Cullasaja watershed. Golf course impoundments, toxicity and temperature problems, as well as lack of suitable macroinvertebrate habitat, are specifically detailed as the chief causes of impairment.

The Upper Cullasaja River has a bioclassification of fair, which earned it listing on the state's 303(d) list for impaired water bodies. Specifically, Mill Creek is impaired for biological integrity because it is unable to support acceptable communities of aquatic organisms (NCDENR 2002). The Cullasaja River was listed in the early 1990's because of Poor and Fair benthic macroinvertebrate classifications (NCDENR 2002).

2. Project Purpose and Goals

This project utilized the talents and resources of its partners to update the information contained in the 2002 DWQ watershed study and the 2004 UCWA Strategy and Action plan to assist in the creation of a nine element watershed restoration plan for the entire 14.4 square mile area of the Upper Cullasaja watershed. Through creating a watershed restoration plan, organizations in the area will be in a good position to prioritize and systematically complete future restoration projects that will improve water quality in the Upper Cullasaja watershed and to use the plan to influence future planning and development activities to avoid additional adverse impacts on the resource.

Working with partners, we identified and addressed factors leading to impaired waters such as: temperature, aquatic organism passage, stormwater runoff, and non-point sources of excess nutrients. In support of this effort, the Aquatics Biomonitoring Program, an ongoing annual collection of fish-based IBI data since 1990, has pledged to continue educating local volunteers through data collection at established sites and at restoration sites, as identified. The development of the nine element watershed restoration plan is meant to further augment UCWA's work in the Upper Cullasaja watershed and to also provide organizations with the opportunity to receive future funding from the 319 program for restoration project implementation.

3. Project Deliverables

A detailed list of project deliverables are presented below:

1. Partner Outreach. We met with key partners and scheduled a meeting for all interested participants to attend.
2. Assign tasks. We discussed a schedule for project completion. Baseline monitoring initiated with student volunteers.
3. Media outreach. We submitted a press release announcing the grant and our plans for a watershed restoration plan on 2/24/2011. The announcement went to a local radio station and 10 local contacts with printed press.
4. Create RFP to hire consultant. We identified a qualified contractor, and were informed that DWQ did not require a RFP to be submitted. Therefore, we hired our consultant for the watershed restoration plan.
5. Partner outreach. Initiation of watershed plan development process, including: collaboration with the Upper Cullasaja Watershed Association, development of stakeholder list, and compilation of existing documents.
6. Hire consultants to assist with watershed restoration plan activities. Coordinated with Highlands Biological Station regarding restoration activities.
7. Baseline monitoring. Data was gathered using both fish data from LTWA and macroinvertebrate data gathered by the consultant and students.
8. Begin monitoring activities with students from HBS. Monitoring began 9/6 with students from Highlands Biological Station. The consultant held an introduction and overview of the project and distributed watershed planning handbooks. The following field days consisted of a watershed tour of the basin, an introduction to aquatic entomology, and sampling of macroinvertebrates.
9. Continue working on watershed restoration plan with consultant. We met with the consultant to discuss progress and plans for HBS students.
10. Hold a series of public meetings for stakeholder input. Consultant met with the Manager of the Town of Highlands, golf course superintendents, the Board of Directors of the Upper Cullasaja Watershed Association and the executive director for the Jackson-Macon County Alliance to discuss the restoration plan and solicit any suggestions.
11. Complete first draft of watershed restoration plan. A first draft of the watershed restoration plan was completed and distributed to partners for review. Key partners received a copy of the watershed restoration plan and were/are encouraged to comment on the document.

12. Hold public meeting to review plan. A public meeting was held on 7/30/12 in Highlands at The First Presbyterian Church, Coleman Hall (471 Main Street Highlands, NC). Thirteen persons were in attendance, including: local press, stakeholders and partners, town planners, and landowners.

13. Complete final review of nine element watershed plan and submit for approval. We recorded all questions/comments from the public meeting, and allowed for a 30-day comment period following the meeting. All comments submitted by August 30, 2012 were considered and addressed in the nine element plan.

14. Complete press release and newsletter article highlighting project. A press release announcing the public meeting was printed and subsequent media article was published in the local paper following the public meeting.

15. Finalize revisions to nine element watershed plan. Submit for approval. The plan was approved on 4/16/2013.

16. Complete press release and newsletter article highlighting the project. The press release was submitted on 5/2/2013.

4. Methodology and Execution

This project utilized the resources contained in the 2002 DWQ watershed study and the 2004 UCWA Strategy and Action Plan to assist in the creation of an approved nine element watershed restoration plan. Logically, we identified the causes of impairment and pollutant sources. We included a watershed map that locates the major causes and sources of impairment. To address the impairments, we set goals that included meeting the appropriate water quality standards.

Based on the water quality standard goals, we estimated the source load reduction needed to meet our proposed goals. Currently, the stream is impaired for biological integrity, however, pollutants from stormwater runoff was addressed and load reductions modeled. Using the suggestions from the 2002 DWQ Assessment and 2007 DWQ Basinwide Water Quality Plan, we were able to describe BMPs that need to be implemented to achieve the load reductions necessary. Based on the proposed BMPs, we were able to estimate the amount of technical assistance needed to implement the entire plan.

In addition to outlining the necessary BMPs, we included an information and education component including activities. The activities were designed to support the adoption and long-term operation and maintenance of BMPs and support stakeholder involvement efforts. A schedule for implementing the management measures with interim measurable milestones was adopted to evaluate progress in implementing BMPs.

We established water quality benchmarks, as projects are implemented according to the measurable milestones. These benchmarks include both direct measurements (load reductions) and indirect indicators of load reduction (number of residents installing rain barrels). A monitoring component was established to determine whether progress is being made toward attaining the applicable water quality standards.

5. Outputs and Results

The main focus of this project was the production of an approved nine element watershed restoration plan. Through this process, secondary goals were achieved. Partners and interested stakeholders were identified through outreach. There was education component using students at Highlands Biological Station to sample macroinvertebrates along impacted and non-impacted streams within the watershed. Furthermore, a public meeting was held to elicit comments of the draft plan. Finally, upon plan approval, a press release was given to media outlets highlighting the results of the project to encourage interest in further restoration opportunities in the watershed.

6. NC DWQ/US EPA Reporting Requirements

Not Applicable

7. Outcomes and Conclusions

This plan was developed to provide additional support for the efforts of LTLT, UCWA, the Town of Highlands and other committed stakeholders by enhancing opportunities for future funding of beneficial water quality restoration and protection efforts. The strategies outlined in the plan included new and expanded biological and chemical monitoring systems, implementation of more effective Best Management Practices (BMPs) for mountainside slopes and small streams, innovative regulations and incentives for water quality improvements, and measurable criteria for project improvement. Also included were suggestions for public education and awareness efforts, as well as for habitat restoration and preservation.

The document provides more current information and additional planning elements to further the common goals of (1) improvement of water quality in all impacted streams and lakes in the watershed, (2) Removal of the Cullasaja River and Mill Creek from the 303(d) list of impaired streams, and (3) Protection of the streams where the water quality is still good but which may be threatened.

Given the nature of the project, we have little advice which we can pass along for others to learn from our own experience. The exception would be the importance of having local stakeholder support and participation. Any plan will be more successful with more partner and public involvement.

8. Budget

Budget Categories	Justification	319 Funds		Non-Federal Match	
		Estimated	Actual	Estimated	Actual
Personnel/Salary	Planning phase, meet with Town officials and consultants, HBS monitoring	6,074	6,074	3,610	32,083
Fringe Benefits	Retirement and health insurance	336	336	0	103
Equipment	Monitoring equipment (HBS computers, GIS, macroinvertebrates)	0	0	650	550
Travel – LTWA	Site visits, partner meetings, project management and implementation, project oversight	250	250	0	8
Contractual	Data acquisition and complete 9 element restoration plan	8,000	8,000	3,750	12,400
Other	LTWA monitoring	0	0	2,280	1,009
Total Direct		14,660	14,660	10,290	45,144
Indirect	Office expenses, payroll expenses, etc.	1,465	1,465	1,700	1,828
Grand Total		\$16,125	\$16,125	\$11,990	\$47,981

9. References

Assessment Report: Biological Impairment in the Upper Cullasaja River Watershed, Little Tennessee River Basin, Macon County, N.C. 2002. North Carolina Department of Environment and Natural Resources, Division of Water Quality Planning Branch.

Little Tennessee River Basinwide Water Quality Plan. 2007. North Carolina Department of Environment and Natural Resources, Division of Water Quality Planning Branch.

Upper Cullasaja River Watershed Strategy and Action Plan. 2004. Upper Cullasaja Watershed Association.

10. Appendix A – Watershed Restoration Plan

The nine element Watershed Restoration Plan can be downloaded directly from the DWQ website:

<http://portal.ncdenr.org/web/wq/ps/nps/319program/nc-watershed-plans>

11. Appendix B – Supporting Material

Press Release 1

9/1/2011

Little Tennessee Watershed Association Announces Upper Cullasaja Planning Project

On January 1, 2011 the Little Tennessee Watershed Association (LTWA) was awarded a 2-year grant from the North Carolina Department of Environmental and Natural Resources (NCDENR). The monies received were part of a federal grant to the state of North Carolina for pollution control stemming from Section 319 of the Clean Water Act. The grant was specifically designated for use on impaired waters in need of improvement. LTWA intends to use this money over the course of two years to complete an approved nine element watershed restoration plan within the Upper Cullasaja River along the Highlands plateau.

The Highlands region is a hotspot for many unique and diverse organisms both on land and in the water. Historically, sedimentation from roads, construction sites, and stormwater runoff has been the major threat to these organisms. Since 1998, the state has identified the Upper Cullasaja River and Mill Creek as impaired.

The Little Tennessee Watershed Association will work closely with the Upper Cullasaja Watershed Association (UCWA) to provide an updated watershed plan. This new plan will update portions of the 2004 Upper Cullasaja Watershed Association plan and make recommendations for restoration while addressing new planning elements recently mandated by the Environmental Protection Agency.

LTWA will also work with students studying at the Highlands Biological Station through the University of North Carolina Institute for the Environment Program to collect data that will assist in the development of a more comprehensive watershed restoration plan for the Upper Cullasaja River watershed. LTWA will utilize the expertise from these partners (HBS and UCWA) and local consultants to assist the student monitoring process, help review existing plans for the Upper Cullasaja, and to develop the updated restoration plan.

Public participation will be essential in the development of this plan. Plans are to solicit and include information and feedback from all stakeholders in the target watershed. If you would like more information about this project or would like to learn how to get involved, please contact our office at 828-369-6402.

Press Release 2

7/13/2012

Public Meeting Announcement

The Land Trust for the Little Tennessee (LTLT) was awarded a 2-year grant from the North Carolina Department of Environmental and Natural Resources on January 1, 2011. The money received was part of a federal grant to the state of North Carolina for pollution control stemming from Section 319 of the Clean Water Act.

The grant was specifically designated for the use on impaired waters in need of improvement. Since 1988, the state has identified the Upper Cullasaja River and Mill Creek as impaired. LTLT has used the money to construct a nine-element watershed restoration plan within the Upper Cullasaja River along the Highlands plateau.

The Highlands region is a "hotspot" for many unique and diverse organisms both on land and in the water. Historically, sedimentation from roads, construction sites and stormwater runoff has been the major threats to these organisms.

LTLT has worked closely with organizations such as the Upper Cullasaja Watershed Association and Jackson-Macon Conservation Alliance to plan and make recommendations for restoration while addressing new planning elements recently mandated by the Environmental Protection Agency.

LTLT has also worked with students at the Highlands Biological Station to collect data that helps inform the development of a more comprehensive watershed restoration plan for the Upper Cullasaja River watershed.

Public participation is essential in the development of this plan, therefore a public meeting will be held at Coleman Hall in the First Presbyterian Church on Monday, July 30 at 1:30PM. Plans are to present the results of the study with the suggested recommendations for the nine-element plan and to solicit feedback from all stakeholders in the target watershed.

For more information, call LTLT at 524-2711 x309.

Press Release 3

8/6/2012

Post-Meeting Results

On Monday, July 30, the Land Trust for the Little Tennessee (LTLT) held a public presentation at the First Presbyterian Church to reveal the results and recommendations of 2-year grant project from the North Carolina Department of Environmental and Natural Resources awarded in 2011. The money received was part of a federal grant to the state of North Carolina for pollution control stemming from Section 319 of the Clean Water Act. The LTLT, in cooperation with the Upper Cullasaja Watershed Association (UCWA) has undertaken the revision and update of the 2004 Upper Cullasaja Watershed Action and Strategy Plan to address new planning elements. By addressing these additional planning elements, it is hoped that eligibility for receipt of EPA Section 319 implementation funds for beneficial restoration and water quality improvement projects within the Upper Cullasaja Watershed will be significantly enhanced.

The grant was specifically designated for the use on impaired waters in need of improvement. Since 1988, the state has identified the Upper Cullasaja River and Mill Creek as impaired. Although small in total acreage, the watershed has different issues on several of the stream basins, making it difficult to generalize the watershed conditions and solutions to problems. LTLT has used the money to construct a nine-element watershed restoration plan within the Upper Cullasaja River along the Highlands plateau.

This revised plan relies heavily on information contained in the 2004 Plan, as well as reports published by other agencies and entities and work performed by students of the University of North Carolina Institute for the Environment while in residence at the Highlands Biological Station.

The strategies outlined in the plan include new and expanded biological and chemical monitoring systems, implementation of more effective Best Management Practices (BMPs) for mountainside slopes and small streams, innovative regulations and incentives for water quality improvements, and measurable criteria for project improvement. Also included are public education and awareness efforts, habitat restoration and preservation. The goals of this plan are:

- Improvement of water quality in all impacted streams and lakes in the watershed
- Removal of the Cullasaja River and Mill Creek from the 303(d) list of impaired streams
- Protection of the streams where the water quality is still excellent

Most importantly, this plan has been developed to provide additional support for the efforts of UCWA, LTLT, J-MCA, the Town of Highlands and other committed stakeholders by enhancing opportunities for future funding of beneficial water quality restoration and protection efforts.

A copy of the draft plan is available at Hudson Library and open to public comment through August 30th. For more information, or to obtain an electronic copy of the draft plan, please contact Jason Meador at the Land Trust for the Little Tennessee (828.524.2711 x309).

Press Release 4

4/25/2013

LTLT Announces Completion of Upper Cullasaja Watershed Restoration Plan

A watershed plan for the upper Cullasaja River has been approved. Funded by a 2-year grant from the North Carolina Department of Environmental and Natural Resources, the Land Trust for the Little Tennessee (LTLT) has compiled available data and feedback from stakeholders to develop a feasible approach to improving water quality. The money received was part of a federal grant to the state of North Carolina for pollution control stemming from Section 319 of the Clean Water Act. The LTLT, in cooperation with the Upper Cullasaja Watershed Association (UCWA) has undertaken the revision and update of the 2004 Upper Cullasaja Watershed Action and Strategy Plan to address new planning elements. By addressing these additional planning elements, it is hoped that eligibility for receipt of EPA Section 319 implementation funds for beneficial restoration and water quality improvement projects within the Upper Cullasaja Watershed will be significantly enhanced.

The grant was specifically designated for the use on impaired waters in need of improvement. Since 1988, the state has identified the Upper Cullasaja River and Mill Creek as impaired. Although small in total acreage, the watershed has different issues in several of the subwatersheds, making it difficult to generalize the watershed conditions and solutions to problems. LTLT has used the money to construct a nine-element watershed restoration plan within the Upper Cullasaja River along the Highlands plateau.

This revised plan relies on information contained in the 2004 Plan, as well as reports published by other agencies and entities and work performed by students of the University of North Carolina Institute for the Environment while in residence at the Highlands Biological Station.

The strategies outlined in the plan include new and expanded biological and chemical monitoring systems, implementation of more effective management measures, incentives for water quality improvements, and measurable criteria for project improvement. Also included are public education and awareness efforts, habitat restoration and preservation. The goals of this plan are:

- Improvement of water quality in all impacted streams and lakes in the watershed
- Removal of the Cullasaja River and Mill Creek from the 303(d) list of impaired streams
- Protection of the streams where the water quality is still excellent

Most importantly, this plan has been developed to provide additional support for the efforts of UCWA, LTLT, J-MCA, the Town of Highlands and other committed stakeholders by enhancing opportunities for future funding of beneficial water quality restoration and protection efforts.

A copy of the plan is available at Hudson Library. Electronic copies will be made available through the North Carolina Division of Water Quality's website (<http://portal.ncdenr.org/web/wq/ps/nps/319program/nc-watershed-plans>).



Watershed Improvement Summary

North Carolina Partnership

Improves Water Quality in Cullasaja River

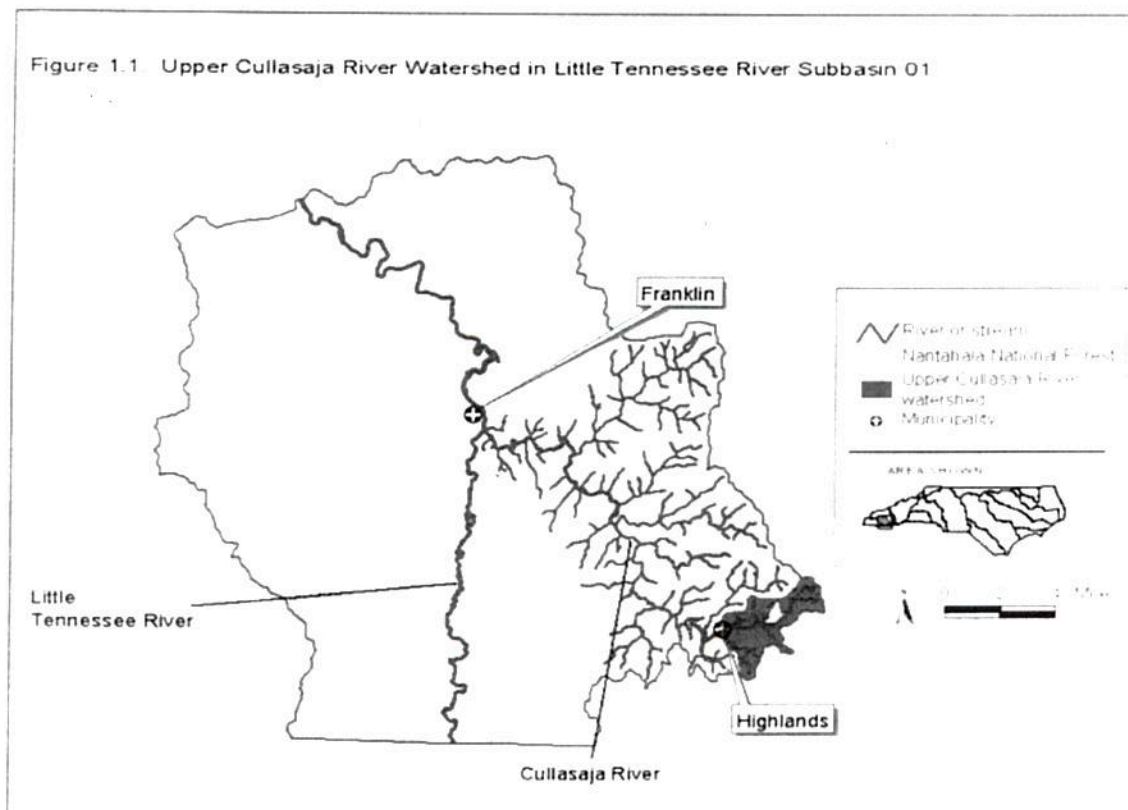
Watershed Description

The Cullasaja River flows through the Blue Ridge Mountains of North Carolina and into the Little Tennessee River. Its 59,263 acre watershed lies on the Highlands Plateau, an area noted for exceptionally high rainfall (80 - over 100 inches per year). The upper portions of the watershed in southeastern Macon County contain most of the Town of Highlands and surrounding lands. The historic logging activities, current high level of impervious ground cover, and channelization and damming of streams degrade water quality in the river.

Problem

The Upper Cullasaja Watershed Association estimates that as of 2004, the land use in the watershed is approximately 50% residential-commercial-industrial and 50% forested. In 2002, the baseline year for demonstrating water quality improvement under EPA's Strategic Plan Measure SP-12, the Cullasaja River was listed as impaired for biological integrity on North Carolina's 303(d) list of impaired water bodies. The listing covered approximately 4.4 river miles from the river's source on Whiteside Mountain to State Road 1545.

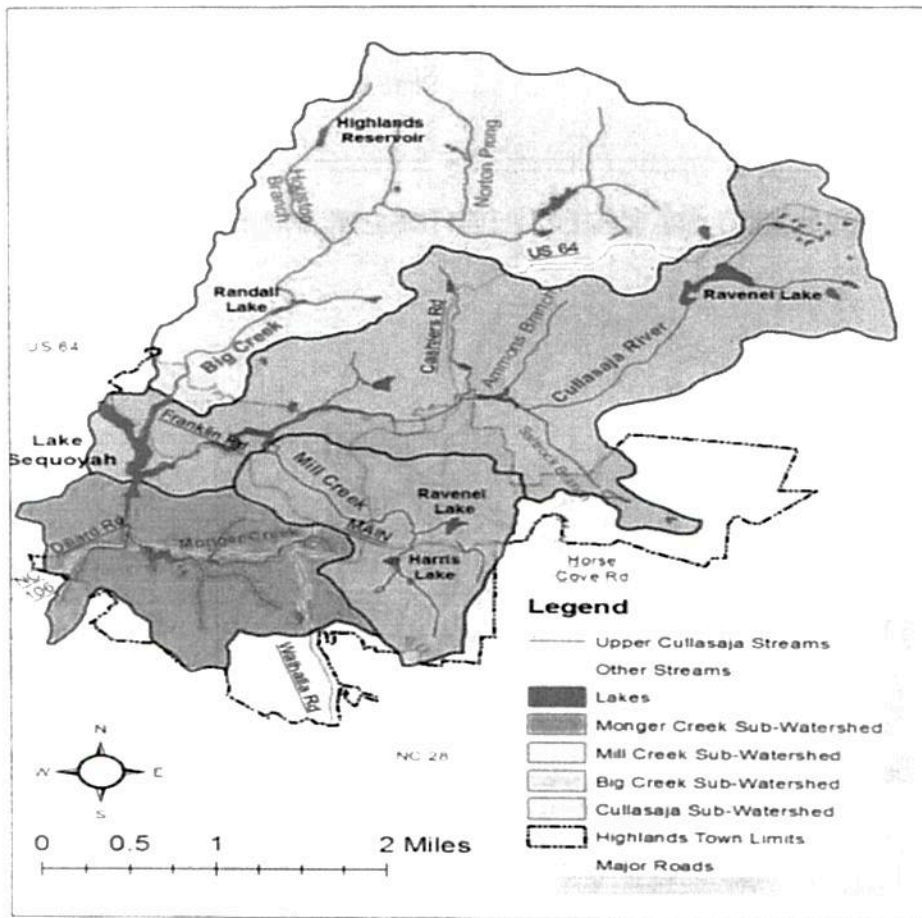
Figure 1.1 Upper Cullasaja River Watershed in Little Tennessee River Subbasin 01



Contacts

Name	Affiliation	Phone	Email
Bob Wright	Board Member, Upper Cullasaja Watershed Association	(828) 371-2086	twodogs@hcgexpress.net
Jason Meador	Land Trust for the Little Tennessee River	(828) 524-2711	jmeador@ltrl.org
Paul Clark	Use Restoration Watershed Coordinator	(919) 807-6443	Paul.clark@ncdenr.gov
Veronica Fasselt	North Carolina Watershed Coordinator	(404) 562-9471	Fasselt.veronica@epa.gov

Upper Cullasaja Watershed



Project Highlights

Restoration Projects Implemented:

- ♦ New Wastewater Treatment Plant in the Town of Highlands
- ♦ Underground Stormwater Treatment for 14.6 Acre Commercial Area in the Town of Highlands (Pine Street Drainage)
- ♦ Rain Garden & Permeable Pavement at Highlands Community Child Development Center
- ♦ Best Management Practices at Cullasaja Club (Golf / Tennis / Residential Resort)
 - Steep Slope Avoidance for Fertilizer Application & Mowing,
 - Riparian Buffer Planting,
 - Chemical Use Reduction,
 - Contained Equipment Wash Pad Installation
 - Water Saving Irrigation System

Partners and Funding

US Environmental Protection Agency:

- Section 319 Funding
- Technical Support

NC Division of Water Quality:

- Section 319 Funding
- Assessment of Biological Impairment

Upper Cullasaja Watershed Association:

- Stakeholder Involvement
- Field Work
- Strategy & Action Plan Development

Results

In 2012, 3.7 Miles of Cullasaja River Achieved Water Quality Standards for Biological Integrity.

Partners and Funding

Land Trust for the Little Tennessee:

- Stakeholder Involvement
- Watershed Plan Development

Town of Highlands:

- Stormwater Master Plan Development
- Stormwater Management
- Wastewater Plant Construction & Outfall Relocation

Highlands Child Development Center:

- Stormwater Management

Highlands Biological Foundation:

- Watershed Assessment & Monitoring
- Watershed Plan Development
- Educational Material Development

Coweta Ecological Research Program:

- Water Quality Monitoring
- Stream Restoration Options

Cullasaja Club:

- Stormwater Management

Watershed Science:

- Watershed Plan Development

Jackson-Macon Conservation Alliance:

- Committee Involvement



Water Protection Division

U.S. EPA, Region 4

61 Forsyth Street, SW

Atlanta, Georgia 30303

<http://www.epa.gov/region4/water/watersheds/index.html>

To: Tony Able
Watershed and Nonpoint Source Section
U. S. Environmental Protection Agency
Region 4, Atlanta, GA

February 28, 2005

From: Katy Calloway, Executive Director
Upper Cullasaja Watershed Association
Highlands, NC

Subject: Final Report
Regional Geographic Initiative Grant
Contract No. X-97468902-0

The goal of the Regional Geographic Initiative Grant for Watershed Planning and Restoration was to implement effective actions to clean up Nonpoint source pollution and biological impairment problems in the 303(d) listed waters of the upper Cullasaja River and Mill Creek. Both are headwater streams in a high elevation, mountain watershed of rare ecosystem biodiversity on the Highlands Plateau in western NC.

In striving to achieve this goal, the following activities were accomplished by UCWA during the grant period 30 October 2002 through 31 December 2004.

- Prepared the scope of work and Request For Proposal (RFP) for consulting services to develop a watershed strategy and action plan;
- Issued the RFP to 3 bidders in North Carolina, Tennessee, and Florida, evaluated 2 quotes (received one no-bid), and selected Wiggins Environmental Services (WES), Asheville, NC, for the contract;
- Participated in NC DENR Division of Water Quality's (DWQ) presentation of the Assessment Report: *Biological Impairment in the Upper Cullasaja River Watershed, November 2002*, to the Highlands public and supported discussion of local watershed issues based on the report;
- Held four (4) stakeholder meetings to gather issues and input for the watershed strategy and action plan. These meetings included local environmental groups, agencies and local government, representatives of the four area golf courses, and individual citizens;
- Met with consultants and Highlands' Town Engineer to tour existing stormwater drainage system and the site of the town's previous waste water treatment plant, to investigate its potential for use as a stormwater retrofit project site;
- Met with the Highlands Town Board and requested discussions with the appropriate committee to present UCWA's concepts for cooperative and voluntary stormwater control initiatives;
- Identified a funding opportunity with the NC DENR DWQ Planning Section in Raleigh, and obtained cooperating organization commitments to support the grant application and to act as a steering/planning committee during stakeholder development activities;

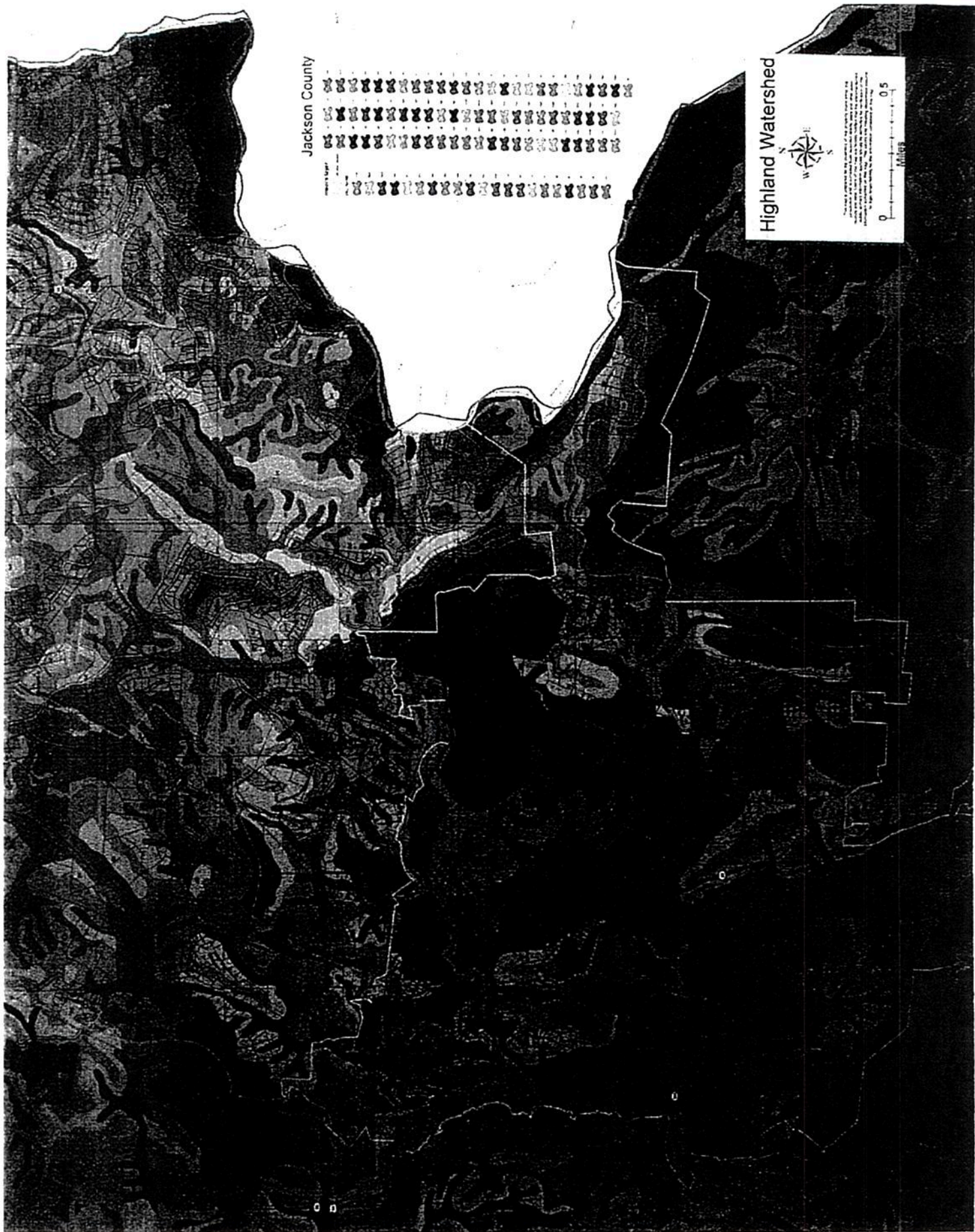
- Applied for a NC 104(b) program grant to further develop local stakeholder participation, to identify prospective water quality project sites, and to obtain stakeholder commitments for specific projects over 18 months starting July 2003;
- Contacted Macon County GIS Department and obtained watershed maps identifying all USGS streams and lakes, roads, town limits, and property tax parcels. A spreadsheet listing of over 5,400 property parcels in the watershed was provided by the County along with a GIS measurement of the closest distance between each parcel and the nearest stream.
- Analyzed and processed the Macon County data to obtain a list of 400 property parcels within 50 feet of a watershed stream.
- The county parcel and tax information was used to develop a watershed mailing list for streamside owners. Direct mailings were prepared jointly with The Highlands Land Trust to raise the awareness of water quality and stormwater control issues. The brochures were mailed in the spring of 2004. Additionally, the mailing list will be used to contact owners to request site surveys along the streams and to identify potential project sites;
- Met with the area golf course managers and course superintendents on 3 different occasions to develop soils information and homeowner guidelines integral to the Nutrients Management Plan task in the RGI grant. These meetings will continue in 2005 and 2006 to develop watershed partnerships with the area golf courses;
- Completed the Watershed Strategy and Action Plan document and issued the draft for agency and cooperating organizations review and comment; final strategy issued February 2004;
- Met with NC State University researchers Greg Jennings, Dan Crawford, and Jon Calabria to tour the watershed to survey potential water quality improvement project sites and to learn more about stormwater BMP practical for the mountains. Key stakeholder sites toured were Cullasaja Club, Highlands Falls Country Club, the Highlands-Cashiers Hospital, Community Bible Church property, the Town-owned properties and abandoned WWTP, and Mirror lake;
- Fall semester 2003, mentored one of the University of North Carolina's Carolina Environmental Program (CEP) students in residence in Highlands. This annual program brings college seniors to the Highlands Biological Station Field Site each year for credit courses, field work and research projects mentored by local agency and nonprofit leaders;
- Met with the Lake Sequoyah Improvement Association, Mirror Lake Improvement Association, and the Town of Highlands to discuss possible initiatives to obtain funding for a lakes remediation and restoration project;
- Was awarded a \$65,000 grant from the NC Division of Water Quality to support extended stakeholder development efforts based on the Watershed Strategy and Action Plan. This grant is a 104(b) program grant administered by NC DENR and will support stakeholder development activities through calendar 2004;

- Obtained a Macon County Soils Report and GIS map showing the soils type overlaid on all watershed property parcels;
- Obtained USDA and NRCS soils data for the watershed as a basis for developing the Nutrients Management Plan. Stocked a set of soil sample kits and instructions to assist watershed residents in taking soil samples on their properties.
- Initiated a new Highlands School Student Intern program for a senior in the 2003-2004 school year, and again in the 2004-2005 school year. The high school senior works under the Executive Director's direction on grant activities and watershed projects as paid contract staff to UCWA.
- Researched with the architect, civil engineering designer, and permeable paving company representatives the selection of three permeable paving systems to be installed for a comparative stormwater management demonstration project in the parking areas of the new Highlands Community Child Development Center in the Highlands, NC, business district.
- Partnered with the Highlands Community Child Development Center on their new construction project begun September 2004 and completed December 2005. UCWA acted as a project technical advisor on the stormwater control BMPs used on this project. These included two stormwater retention ponds during construction, reconstruction of the retention ponds into post-construction rain gardens, and permeable parking areas providing a same site, comparative demonstration project using GravelPave, Turfstone, and Ecostone Unilock paver systems. A complete construction photo history was taken, and UCWA has the use of the actual project construction cost data to assist other watershed stakeholders in developing voluntary post-construction stormwater projects. This HCCDC/UCWA partnership now provides a demonstration site in a central location for the public. In the summer 2005, UCWA will develop interpretative signage and conduct tours of the completed BMPs.

In conclusion, the RGI Grant for Watershed Planning and Restoration enabled UCWA to achieve two very significant goals that will help ensure the future success of our mission of responsible resource management. The first is the production of the Watershed Strategy and Action Plan. The plan sets manageable goals for future watershed projects with measurable outcomes. It will be a tool in helping UCWA secure future funding to implement projects, as well as a tool for public education. UCWA has shared our experience and process in developing the Watershed Strategy and Action Plan with other regional watershed associations in an effort to help them meet their goals for plan development.

The second significant outcome under the RGI Grant was the implementation of stormwater BMPs at the Highlands Community Child Development Center. The Center site, which is centrally located within the town of Highlands, is a fine example of the innovative and attractive techniques used to manage stormwater. It is our hope that we can lead future development projects by example. The three permeable pavement sites located at the property will continue to be monitored for their effectiveness so that UCWA may provide the community with information on cost and efficiency for those considering stormwater management options. Already UCWA has referred numerous property owners and developers to the demonstration site. In the summer of 2005, after interpretive signage has been erected on the site and raingardens have had a chance to mature, UCWA will invite the community to visit the site through scheduled, educational tours.

These two significant milestones in watershed management were achieved in addition to other numerous steps taken towards improving water quality within the upper Cullasaja River watershed. UCWA sincerely appreciates the confidence and commitment of the EPA, demonstrated through the RGI Grant, and looks forward to future progress towards meeting mutual goals.



Jackson County



Highland Watershed



----- Forwarded by Robert Cooper/R4/USEPA/US on 08/15/02 03:30 PM -----

Robert Cooper
08/15/02 11:36 AM

To: Rebecca Kemp/R4/USEPA/US@EPA, Marjan
Peltier/R4/USEPA/US@EPA, Palmer Hough/R4/USEPA/US@EPA,
Priscilla Oliver/R4/USEPA/US@EPA, Wayne
Garfinkel/R4/USEPA/US@EPA, Steven
Blackburn/R4/USEPA/US@EPA, Tony Able/R4/USEPA/US@EPA,
Bernie Hayes/R4/USEPA/US@EPA

cc: Cory Berish/R4/USEPA/US@EPA, Mike Peyton/R4/USEPA/US@EPA,
Alan Farmer/R4/USEPA/US@EPA, Patty
Bettencourt/R4/USEPA/US@EPA

Subject: RGI/EPP Funding

Mr. Palmer as made the following funding decisions for RGI/EPP funding for FY 02. Please get your money committed for these projects ASAP.

RGI : In addition to the funding commitment, these projects need to have the attached Operating Plan form filled out and returned to Bob Cooper by August 29:

Alabama One Stop - \$100,000
Environmental Incident Tracking System - \$84,000
Gulf of Mexico Bacterial Source Tracking - \$75,000
MS DEM GIS - \$150,000
Defining Ground water/Surface water Interactions in FL Watersheds - \$76,000



OpPlan Format.wpx

EPP:

PEHSU Funding - \$55,000
Watershed/Fire Workshop (Coosa Basin) - \$5,000
KY Watershed Roundtable - \$5,000
Upper Cullasaja NPS - \$35,000
RCRA/SC Public Awareness Campaign - \$10,000
UST ERP TN Pilot - \$30,000
MANRRS Conference - \$5,000
RIBITS - \$35,000
SE Watershed Train the Trainer - \$10,000

Upper Cullasaja Watershed Association

P.O. Box 1508 - Peggy Crosby Building
828-526-9938 x23
Highlands, NC 28741

To: Mr. Tony Able,
Watershed and Nonpoint Source Section
Environmental Protection Agency
61 Forsyth Street
Atlanta, GA 30303

May 15, 2002

Subject: Application for Regional Geographic Initiative (RGI) Funding

1. Project Description: The Upper Cullasaja Watershed Association (UCWA) is a 150-member, citizen-based, 501(c)(3) watershed protection organization in Highlands, NC. UCWA's part-time executive director and watershed coordinator is currently funded by a TVA grant. EPA's RGI grant will be leveraged with TVA funding to increase the staff capacity to take the organization to a higher level of performance in watershed protection and restoration action. The RGI grant will also fund development of a comprehensive watershed restoration and protection strategy and action plan that addresses two 303(d)-listed impaired streams as well as stormwater control, sedimentation control measures, and lakes remediation. A nutrients and pesticides/herbicides monitoring plan and chemical testing program will be developed to confirm high priority locations for improved pollutant source management initiatives. In community outreach and involvement, RGI funds will be used to cost-share in a urban stormwater control demonstration project featuring innovative technology in an permeable parking system on a steep-sloped property in the Town of Highlands, NC, business district.

2. Project Background: UCWA's goal is to implement effective actions to clean up nonpoint source pollution and biological impairment problems in the 303(d)-listed waters of the upper Cullasaja River and Mill Creek. Both are headwater streams in a high elevation mountain watershed of rare ecosystem biodiversity on the Highlands Plateau in western North Carolina. UCWA has already forged effective and successful partnerships with local governments, NC DENR, TVA, USGS, and local businesses and other nonprofits in the region. UCWA is conducting community outreach projects and scientific studies of water resources and the water balance for the watershed. UCWA's goal is to extend their local initiatives to augment and carry out the recommendations of The NC Div. Of Water Quality's "Watershed Assessment Report: Biological Impairment in the Upper Cullasaja River Watershed (draft) funded by the NC Clean Water Management Trust Fund in 2000 and 2001. The WARP report identifies urban storm water control (including runoff of fertilizers and pesticides) and habitat restoration as priority restoration objectives.

3. Expected/Anticipated Outcomes: UCWA will work with local governments, businesses, golf courses, state and federal agencies to coordinate the project planning and implementation in the watershed. These partnerships are in place. This RGI grant will enable UCWA to develop water quality and watershed restoration strategies targeted at future (2004) applications for 319 funding to implement restoration projects on the ground in a long-term program to improve water quality and to remove the impaired streams from the 303(d) list.

4. Budget:	Develop a Watershed (15 sq. mile) Restoration and Protection Strategy (WRPS)	\$ 10,000
	The sub-projects below have been defined and are an immediate priority.	
	• Cost Share Stormwater Control Demonstration	
	• Innovative Technology (Pervious Pavement) Project.....	\$ 20,000
	• Develop a Nutrients, Pesticides and Herbicides Monitoring Plan	
	and Chemical Testing to Identify High Priority	
	Targets for Nutrients Management Planning.....	\$ 10,000
	• Implement Nutrient Management Plans with Local Golf Courses.....	\$ 10,000
	• Organizational Capacity Expansion (staffing increase).....	\$ 20,000
	Total Grant Request	\$ 70,000

5. Project Duration: UCWA anticipates it will require two (2) years to complete this project.

6. Contact: Bob Wright, Executive Director, phone:(828) 526-9938, ext. 23; fax: (828) 526-0066
email: twodogs01@earthlink.net



To: Mr. Tony Able,
Watershed and Nonpoint Source Section
Environmental Protection Agency
61 Forsyth Street
Atlanta, GA 30303

August 29, 2002

UCWA-RGI-02-01

Subject: Application for Regional Geographic Initiative (RGI) Funding - Work Plan

1. Project Description: The Upper Cullasaja Watershed Association (UCWA) is a 150-member, citizen-based, 501(c)(3) watershed protection organization in Highlands, NC. UCWA's part-time executive director and watershed coordinator is currently funded by a TVA grant. EPA's RGI grant will be leveraged with TVA funding to increase the staff capacity to take the organization to a higher level of performance in watershed protection and restoration action. The RGI grant will also fund development of a comprehensive watershed restoration and protection strategy and action plan that addresses two 303(d)-listed impaired streams as well as stormwater control, sedimentation control measures, and lakes remediation. A nutrients management program will be developed in partnership with local golf course managers to confirm high priority locations for improved pollutant source management initiatives. In community outreach and involvement, RGI funds will be used to cost-share in an urban stormwater control project featuring innovative technology in a permeable parking system on a steep-sloped property in the business district of Highlands, NC. Consultants and contractors will be employed to carry out these project activities.

2. Project Background: UCWA's goal is to implement effective actions to clean up nonpoint source pollution and biological impairment problems in the 303(d)-listed waters of the upper Cullasaja River and Mill Creek. Both are headwater streams in a high elevation mountain watershed of rare ecosystem biodiversity on the Highlands Plateau in western North Carolina. UCWA has already forged effective and successful partnerships with local governments, NC DENR, TVA, USGS, and local businesses and other nonprofits in the region. UCWA is conducting community outreach projects and scientific studies of water resources and the water balance for the watershed. UCWA's goal is to extend their local initiatives to augment and carry out the recommendations of The NC Div. Of Water Quality's Watershed Assessment Report: *Biological Impairment in the Upper Cullasaja River Watershed* funded by the NC Clean Water Management Trust Fund in 2000 and 2001. The WARP report identifies urban storm water control (including runoff of fertilizers and pesticides) and habitat restoration as priority restoration objectives.

3. Expected/Anticipated Outcomes: UCWA will work with local governments, businesses, golf courses, state and federal agencies to coordinate the project planning and implementation in the watershed. These partnerships are in place. This RGI grant will enable UCWA to develop water quality and watershed restoration strategies targeted at future (2004) applications for 319 funding to implement restoration projects on the ground in a long-term program to improve water quality and to remove the impaired streams from the 303(d) list.

4. Deliverables: Outcome 1) - Watershed protection and restoration plan for the upper Cullasaja River
Outcome 2) - A pervious parking lot in Highlands to begin stormwater management activities
Outcome 3) - A nutrient management strategy implementation for the watershed

5. Budget:	Develop a Watershed Restoration and Protection Strategy (WRPS)	\$ 10,000
	The sub-projects below have been defined and are an immediate priority.	
	• Cost Share Stormwater Control Measures	
	Innovative Technology (Pervious Pavement) Project.....	\$ 15,000
	• Implement Nutrient Management Planning with Local Golf Courses.....	\$ 1,500
	• Organizational Capacity Expansion (staffing increase).....	\$ 8,500
	Total Grant Request	\$ 35,000

5. Project Duration: UCWA anticipates it will require two (2.25) years and three months to complete this project.

6. Reporting: Project status reports and Financial Reports, if required, will be submitted annually.

7. Contact: Bob Wright, Executive Director, phone:(828) 526-9938, ext. 23; fax: (828) 526-0066
Email: twodogs01@earthlink.net

This letter shows AGE over helping is capacity

Upper Cullasaja Watershed Association

P.O. Box 1508 - Peggy Crosby Building
828-526-9938 x23
Highlands, NC 28741

01 May 2002

To: Mr. Forrest Westall,
Water Quality Supervisor
Asheville Regional Office
Division of Water Quality
NC DENR
Interchange Building
59 Woodfin Place
Asheville, NC 28801-2414

To: Mr. Jim Blose
Special Watershed Projects Unit Supervisor
Planning Branch
Division of Water Quality
NC DENR
1619 Mail Service Center
Raleigh, NC 27699-1619

Subject: Request to Hold Public Release of *The Watershed Assessment and Restoration Project Report on the Upper Cullasaja River Watershed*, Highlands, NC

Gentlemen:

As a primary public stakeholder representative group in the watershed, UCWA requests that DWQ place the public release of the WARP report on the Upper Cullasaja River Watershed on Hold until such time that a review panel consisting of project team, DWQ management, Clean Water Management Trust Fund, Town of Highlands, UCWA, Macon County and NRCS representatives can meet and resolve all comments and concerns with the technical accuracy of the report.

The attached letter addressed to the WARP project leader outlines our review team's technical concerns with the subject report. We believe this report includes significant logical errors and inconsistencies. In addition, UCWA's Board of Directors wish to express to the management of the Division of Water Quality the following concerns for the potential consequences of making this report public as currently written.

UCWA's technical review team does not find sufficient test data or facts in the report to support the repeated statements de-emphasizing sedimentation as a major cause of impairment in the watershed. It appears that neither sediment accumulations nor their causal effects on the original impairment to the streams and the benthic communities were analyzed and that considerable scientific documentation by the Division of Water Quality and other researchers has been overlooked, or discounted, by the WARP team.

Additionally, The Town of Highlands has recently received written notice by DENR's UST section requiring the town to conduct ground water contamination monitoring at sites de-prioritized and abandoned in the 1990's. UCWA believes that, until such time that the DWQ test results can be shown to be conclusive, the use of the WARP report conclusions which are unsupported by their own test data or fact are insufficient reason to raise the site's priority and require the expenditure of taxpayer funds for monitoring and testing. Further, we find no basis in fact to support the statement that DWQ needs to investigate imposition of the NPDES II stormwater regulations on the Town of Highlands.

In recent years, local governments, NRCS, the Macon Soil and Water Conservation District, LTWA, and UCWA have made significant progress in local erosion control, land use planning, and water quality initiatives. By stating that sediment is not a primary cause of the impairment to streams in the watershed, the WARP report represents the most serious challenge to this progress in the watershed to-date.

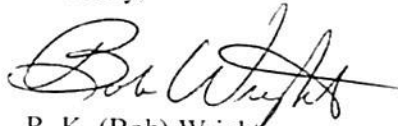
In the upcoming Macon County primaries and elections, there are candidates running for election as county commissioners with the stated purpose to repeal the local land use planning and water quality initiatives. As currently written, DWQ's WARP report will provide these candidates their most valuable piece of ammunition with which to defeat the water quality gains in the Little Tennessee River watershed basin and Macon County. We recommend that you review the conclusive statements in the report to determine if these statements represent the position of the Division of Water Quality and will achieve the desired results in Macon County and the Town of Highlands.

UCWA supports DWQ's objectives in determining the sources of impairment in the upper Cullasaja River and Mill Creek, and we plan to be a major contributor in implementing many of the watershed improvement initiatives recommended.

However, at this time, UCWA believes the extensive use of probabilistic language and the insufficient correlation between project test data and the conclusions render this draft of the WARP report to be misleading to the public. We believe the draft will be seen as inflammatory in the community and could become the source of public backlash. Worse, we believe that the report has the potential to support the arguments of those in Macon County that oppose land use planning, better erosion control, and water quality initiatives.

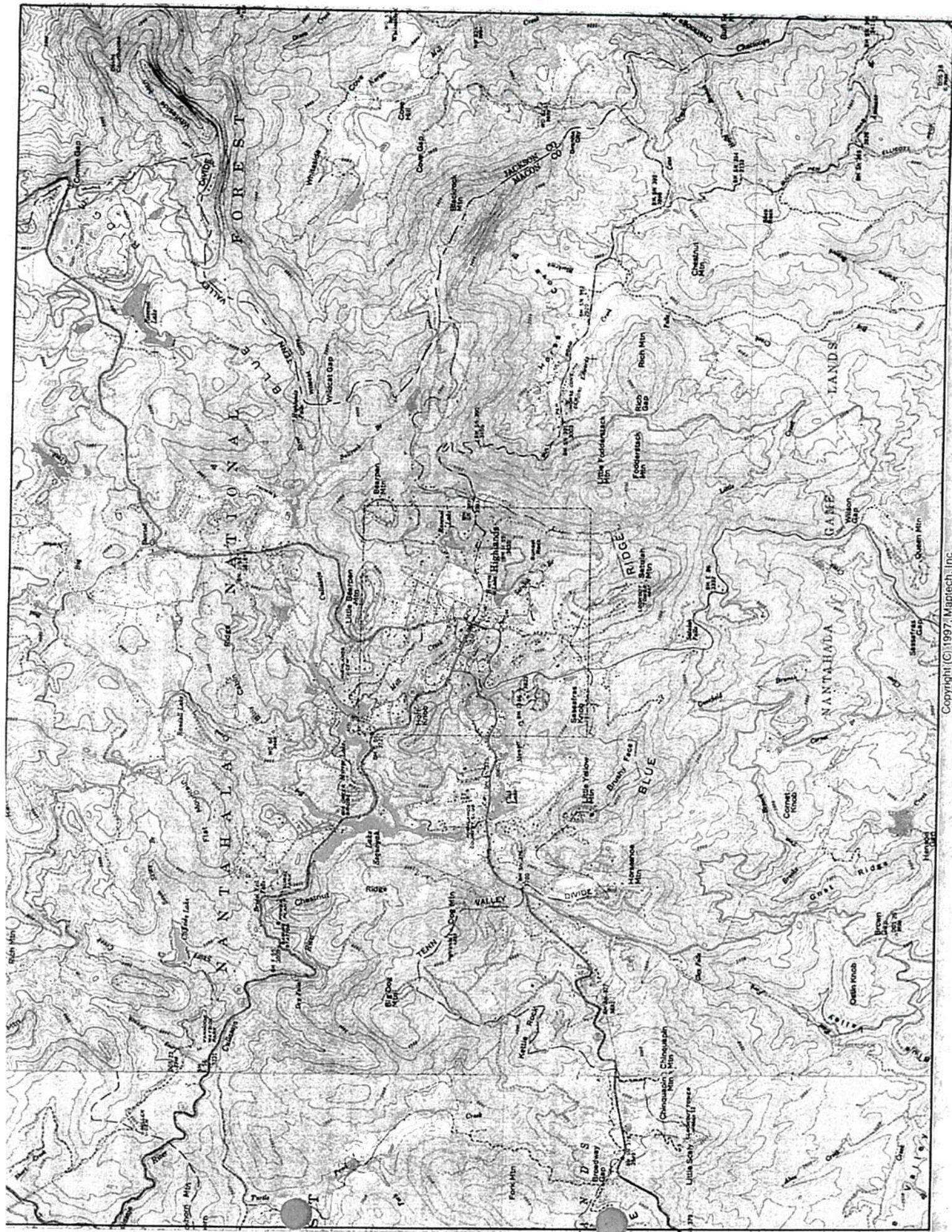
In its present format, public release of the report would force UCWA and other stakeholder groups to publically respond to the report's conclusions. We do not want to see this situation develop. Our request is not to suppress the legitimate scientific findings and conclusions of this important project. Rather, we wish only to delay public release of the report for the time that is required to resolve local stakeholders' concerns and comments to produce a report that UCWA and others can support publically.

Sincerely,

A handwritten signature in dark ink, appearing to read "Bob Wright", is written over the typed name.

R. K. (Bob) Wright,
Vice-President and Executive Director
Upper Cullasaja Watershed Association, Inc.

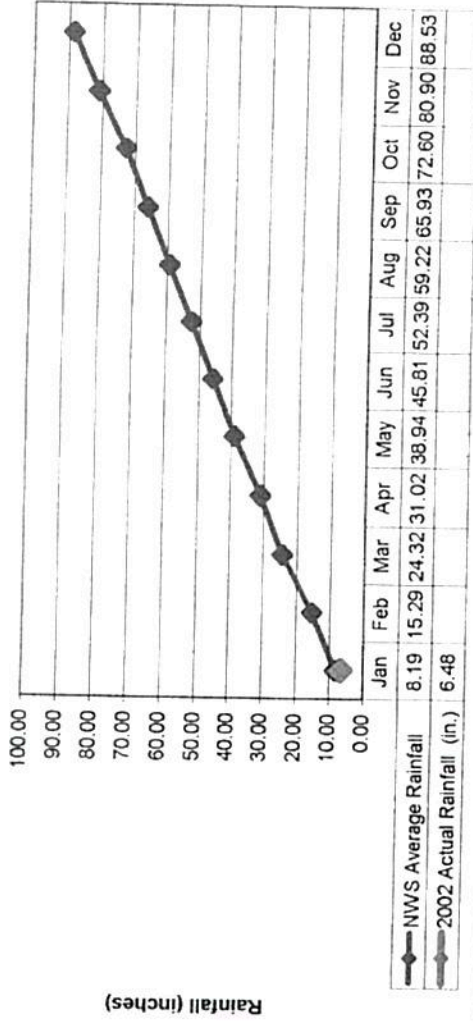
cc: Gregory Thorpe, Acting Director, Division of Water Quality, NC DENR
Sam Greenwood, Macon County Manager
Allen L. Trott, Mayor, Town of Highlands, NC



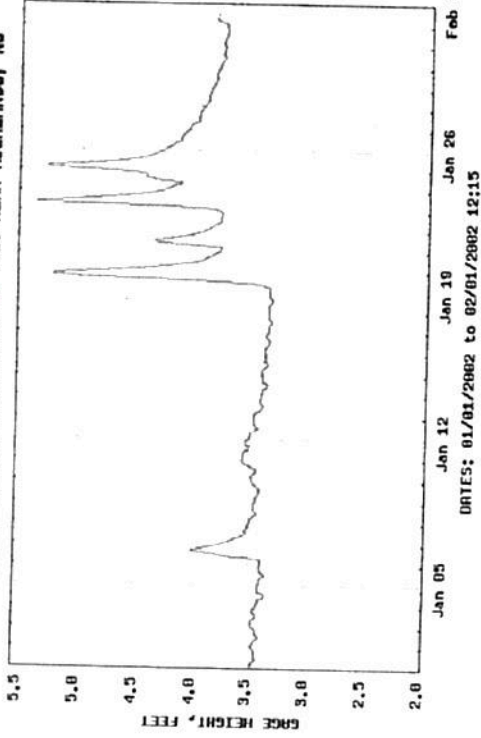


Upper Cullasaja Watershed Data—January 2002

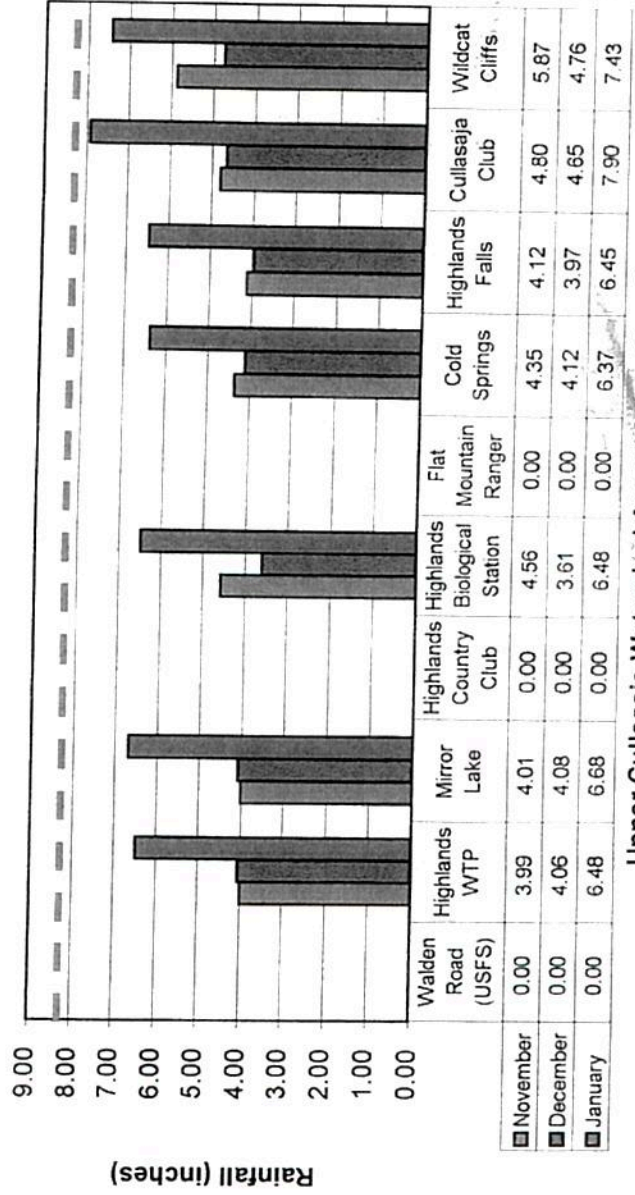
Annual Rainfall Status - Highlands Biological Station



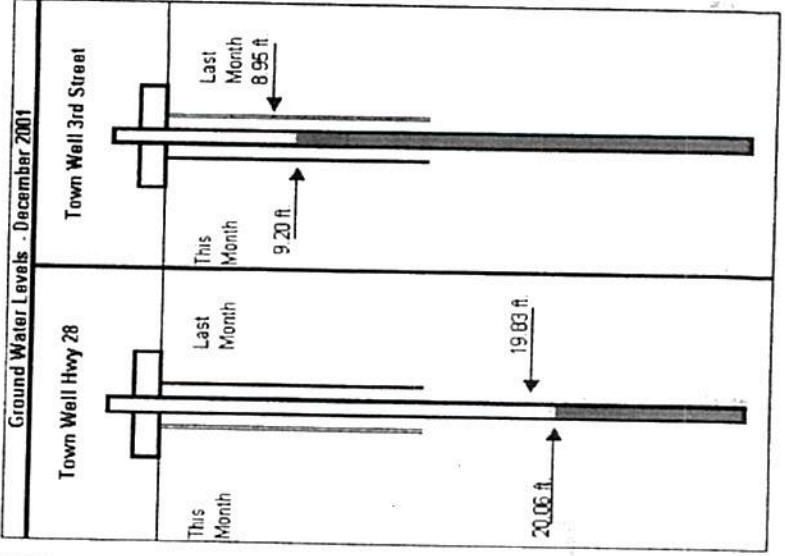
USGS 0350056050 CULLASAJA RIVER AT SR 1620 NEAR HIGHLANDS, NC



Rainfall Across the Highlands Plateau



Upper Cullasaja Watershed Association - Gage Location



NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY



JAMES B. HUNT JR.
GOVERNOR

WAYNE MCDEVITT
SECRETARY

A. PRESTON HOWARD,
JR., P.E.
DIRECTOR

December 3, 1998

Duane Robertson
US EPA Region 4
61 Forsyth St.
Atlanta, GA 30303

Duane:

I've enclosed all nineteen of the applications North Carolina received for FY99 incremental funding. Of these applications, I feel the eleven flagged have greater potential for restoration according to UWA guidelines. If we funded all of them, as is, the federal request would be just over \$2,000,000.

Our review group should have some preliminary picks by next Friday. I appreciate any input you or any of the people in your shop can offer on the ones I flagged. Thanks.

Sincerely,

Linda Hargrove
Section 319 Coordinator

* Jan 16 deadline for §319

DRAFT

Evaluation Table for Section 319 Fiscal Year 1999 Incremental Funding

Notes: All the project address waters not already in category 1 or 2 (high priority). The project is with shaded numbers address waters in high priority category 1 (H1), 1 PA strongly recommends that we target money toward the high priority H1's in the number applications received only. If are included in this packet. The right that are not being considered in this review did not meet the minimum standard, that is, the potential for watershed use restoration as identified on the United Watershed Assessment (UWA). For the table below:

- Score the project a 1 if the project is for an entire watershed, otherwise give it a 2.
- Score the project a 1 if the project is to be combined with an existing project, otherwise give it a 2.
- Score the project a 1 if it addresses issues raised in the Basin for UWA Category column (see enclosed table). If none of the issues are addressed, give the project a 2.
- Total scores across for each project.

For each project, make suggestions as to how each project can be made into more of a restoration effort. For instance, reducing the education effort and increasing BMP installation sites.

Project Name	Project Description	Lead Organization	Fed Request	Match Provided	Total	Watershed oriented	Combined?	UWA issues addressed?	Program priority	Rank Total	Comments
1	Nashua Swamp Project (01/02/2010-04)	Wayne and Green SWCD	30,000	20,000	50,000						
2	Culiacas R. Proj (Macom Co) (04/10/2020/20)	Save Our Rivers	300,000	140,000	440,000						
3	Newfound Creek Proj (04/10/10/04)	Burnsby SWCD	441,250	294,167	735,417						
4	Sandy Creek Project (supplemental), (Vance, Franklin, Nash Co) (03/20/01/10)	NC CES	92,736	61,824	154,560						
5	Nash County Proj (01/02/01/10)	Nash SWCD	116,600	84,000	200,600						
6	Beaufort County Project (01/02/01/04)	Beaufort SWCD	150,000	120,000	270,000						
7	Bear Creek Project (Dnlow, Craven, Carteret, and Jones Co) (01/02/01/06, 01/01/00/01)	NC CES	59,964	39,976	99,940						
8	Sedimentation Basin Improvement Project (supplemental) (01/02/02/02)	NC Soil Science Dept	126,090	87,562	213,652						
9	Smith and Austin Creeks Project (01/02/01/07)	Wake SWCD	196,750	132,300	329,050						
10	Little Ivy Project (06/10/05/11/02/10)	Madison SWCD	400,000	396,500	796,500						
11	Crating for the Craterina Proj (01/02/01)	Ag BMPs to reach 30% reduction	114,839	55,414	170,253						
Total			2,028,229	1,431,943	3,460,172						

11/01/2010 is high priority

Section 319 Pre-Proposal Form FY99
PART 1 (See Instructions for Part 1)

Name of Project/Program: The Cullasaja River Project Project

Lead Organization (contact person, phone number, and address):

Peg Jones, President
Save Our Rivers, Inc.
P.O. Box 122
Franklin, NC 28744
(828) 369-7877

Cooperating Organization: the Little Tennessee River Basin Non-Point Source Pollution Team, the North Carolina Division of Water Quality (Bioassessment Group & Wetlands Reserve Program), the North Carolina Wildlife Resources Commission, the North Carolina Division of Forest Resources, the USDA Natural Resources Conservation Service and Forest Service, Tennessee Valley Authority - Clean Water Initiative, the U.S. Geological Survey, the North Carolina Watershed Coalition, the Sierra Club, the North Carolina Wildlife Federation, Outward Bound, Trout Unlimited, students and faculty from Western Carolina University, Southwestern Community College and the University of North Carolina at Asheville

State NPS Management Program Milestone(s) supported:

- Table 32. Action Plan to Control NPS from Urban Areas
Goal A
- Table 33. Action Plan for Controlling NPS from Construction
Goal A
- Table 36. Action Plan for Controlling NPS from Forestry
Goal A & B
- Table 39. Action Plan to Reduce NPS resulting from Hydrologic Modifications
Goal A, B, C
- Table 41. Action Plan for NPS Monitoring
Goal A, B, C
- Table 42. Action Plan to Develop NPS Educational Program
Goal A & B
- Table 43. Action Plan for General NPS Activities
Goal A & B

Project Location (include name of NPS priority watershed AND the 11-digit Hydrologic Unit Code): Cullasaja River Watershed, in southern Macon County, Little Tennessee River Basin, HU# 06010202020, the watershed is a Category I river, which restoration is a high priority.

**Section 319 Pre-Proposal Form FY99
PART 1 (See Instructions for Part 1)**

Project/Program Objective (include a clear statement of the water quality impairment to be addressed):

The Cullasaja River Watershed is located in southern Macon County and is part of the Little Tennessee River Basin. For thousands of years, the Cullasaja River has nurtured human life in the valley through which it flows. Cherokees built their villages near its banks, and historic interactions between Native and European outfitters occurred here. Where the land opened for pioneer settlement in the early 1800's the most prized tracts and the first to be claimed were the rich bottomlands.

This close tie continues even today. The river is used for recreational purposes such as kayaking, canoeing and trout fishing. It has also been used for numerous baptisms.

There are possible point source pollutants within the watershed. There are several NPDES Stormwater Permits for businesses on the river. These include Cook Brothers Lumber Company, Southern Concrete Materials, and the newly proposed asphalt plant. There are also several NPDES wastewater dischargers on the river; some of which include: Sherwood Forest Division, Highland Falls Country Club, Highlands Mountain Club, Macon County Middle School, Cullasaja School and the Town of Highlands.

Although point sources of pollution exist, many of the problems are due to NPS pollution, principally sediments and nutrient. The four-laning of all the major highways entering the county, has accelerated the pace of flood plain development and loss of riparian buffers. Macon is now the fastest growing of the mountain counties, with a 15% increase in population between 1990 and 1996.

The upper Cullasaja River above Mirror Lake at Highlands (from its source to SR 1545, a distance of approximately 4.8 miles), has a use rating of NS or not supporting its classified uses. Impairment is due to non-point source pollution. Areas of high population growth accompanied by accelerated urbanization surround this portion of the river. Non-point sources of pollution in the upper watershed are likely stormwater runoff, construction sites, numerous golf courses and roads. The Basinwide Water Quality Management Plan recommends further monitoring to assess water quality.

The construction process and poor access road design are thought to be significant causes of erosion. As roads are graded, the spoil is placed in roadside ditches and carried to streams through runoff. Many private drives have 19% slopes, even though 12% is considered to be the maximum permissible slope in sound engineering design. The steep slopes and thin soils found in this area make this region particularly vulnerable to land disturbances.

Further downstream from SR 1545 (approximately ¾ miles below the Sequoyah Dam in Highlands), the river has a ST or support threatened status. This status is likely due to

Section 319 Pre-Proposal Form FY99
PART 1 (See Instructions for Part 1)

development and fertilizers from surrounding golf courses and nutrient and toxic runoff from residential areas.

The project will restore degraded features of the river throughout the watershed and protect it from further digression. The monitoring inventory effort will complement the river restoration and return this great natural resource to its historic place as the center of cultural and community life in the watershed. Furthermore, the watershed is located within the Blue Ridge Province of the Appalachian Mountain Physiographic Division, which is one of the few coniferous rainforests in the United States. We feel as though our riparian restoration efforts will assist in the sustainability of this rare ecosystem.

Project/Program Description:

The funds will provide for water quality and quantity monitoring over a three-year period (May 1, 1999 through September, 2001) on the Cullasaja River (Subbasin 04-04-01), which is becoming a highly developed river in the Little Tennessee River Basin. Monitoring will consist of biological, chemical and morphological sampling. Funding is also requested for a 75/25 percent cost-share program for streambank stabilization and riparian restoration. The cost-share is set-up so that Save Our Rivers, using the Clean Water Management Trust Fund grant, will pay 75% of the project and the landowner pays 25% of the total costs. Successfully managing point source (PS) and non-point source (NPS) pollution requires not only knowledge of science and technology, but also an understanding of the local resources and economy. Although there are some general management guidelines, there is no one single technique for controlling PS or NPS pollution. The most efficient and effective solutions will be site-specific. Formulating solutions often requires cooperation between different parties. Each group that contributes to the problem must be part of the solution.

Monitoring and inventory activities along the Cullasaja will be administered by Save Our Rivers, Inc. in partnership with the North Carolina Division of Water Quality -Biological Assessment Group, the North Carolina Wildlife Resources Commission, the USDA Natural Resources Conservation Service, the U.S. Geological Survey, Western Carolina University and the University of North Carolina at Asheville. Activities will include:

1. Monitoring of river from eight locations along the river. Monitoring will consist of biological, chemical and morphological sampling. Biological sampling will occur twice a year. Morphological and chemical sampling will be collected every other week. Chemical monitoring will include the sampling and analysis of chlorine, pH, dissolved oxygen (DO), fecal coliform, turbidity, and biochemical oxygen demand (BOD).
2. An inventory of riparian zones along the Cullasaja. The inventory will include the identification and mapping of current land use, actual physical streambank condition, and presence of wetlands and riparian forest.

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PART 1 (See Instructions for Part 1)

Streambank stabilization and riparian restoration along the river will be administered by Save Our Rivers in collaboration with the USDA Natural Resources Conservation Service, the North Carolina Wildlife Resources Commission, Trout Unlimited and other key partners. Activities will include:

1. From the stream inventory priority locations will be selected for streambank stabilization. Restoration project areas will be stabilized using bioengineering methods.
2. Riparian restoration techniques are based on continuous riparian zone exclusion and natural revegetation. Restoration usually occurs in conjunction with streambank stabilization projects. And being a supporter of the Southern Appalachian Native Plant Initiative (SANPI), we will plant only native species in the revegetation of riparian areas.

Quantified Specific Outputs/Deliverables (for example, number of reports, manuals, videos, maps, BMPs, meeting, field days, issued permits, etc.):

- 3 Workshops & field days
- 3 public meetings
- 3 Water Quality monitoring days for Outward Bound Students
- 6 Local Watershed Meetings
- 3 school programs
- 3000 feet of streambank and riparian areas restored
- 60 water quality and quantity samples taken
- 1 Final Report for restoration efforts
- 1 Final Report for water quality and quantity efforts

Milestones, including start, completion, and reporting dates (that is, those events that will occur throughout the implementation of the project which EPA uses to track project progress):

The following table lists examples of milestones.

Activity	Date
1) DENR executes contract*	1) May 1, 1999
2) 3 Public meetings	2) Summer 1999 - 2001
3) 3 Workshops & field days	3) Fall 1999 - 2001
4) 3 field days with Outward Bound	4) Summer 1999-2001
5) 6 Local Watershed Meetings	5) 2 Semi-annual Meetings
6) 3 School Programs	6) Spring 1999-2001
7) 3000 Feet of Restoration	7) 1000 Feet Annually
8) 60 Samples Taken	8) Bimonthly 1999-2001

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PART 1 (See Instructions for Part 1)

9) Quarterly reports*	9) Quarterly 1999 - 2001
10) Final report*	10) August 2001

* Mandatory activities

Funding Requested (identify each source of non-federal match, activity funded and amount):

Source of Funds	Descriptions	Amount
Section 319(h)		
Staff		
Travel	Sampling	15,000
Equipment	Water Quality Equipment	20,000
Supplies	Office Supplies	10,000
Contract	Monitoring Services	20,000
Construction	Stream Restoration Cost-share	210,000
Lab Services	Fecal & BOD Analysis	25,000
	TOTAL	300,000
Non-Federal Match (by Agency)		
DWQ	Bioassessment	10,000
Donations	From SOR Members	120,000
LTR NPS Team	In-Kind Salary	10,000
Supplies		
Contract		
Construction		
Other		
	TOTAL	140,000
Other Funding (not Match - by Agency)		
USGS	Gaging Station for 3 years.	27,000
NC CWMTF	Restoration & Monitoring	1,000,000
	TOTAL	1,027,000

Is the requested funding necessary to adequately fund the state base program? ___yes Xno If yes, explain:

Is the requested funding necessary to complete an ongoing, phased project (that is, a multi-year project partially funded by Section 319 funds)? ___yes Xno If yes, name project and grant year.

Section 319 Pre-Proposal Form FY99
PART 1 (See instructions for Part 1)

If this is a multi-year project, have you requested sufficient funds to complete the project (assuming funds requested herein are provided)? ☒ yes ☐ no If no, explain:

Section 319 Pre-Proposal Form FY99
PART 1 (See Instructions for Part 1)

The Lead Organization, as listed on the first page of this form agrees to comply with all requirements specified in the guidance package. (Checking no or expected will cause the project to have a lower ranking than similar project by lead organizations that agree to the requirements.):

☐ No
☒ Yes, excepted as noted below (list exceptions):

Is this a watershed project? ☒ yes ☐ no If yes, complete Part 2 of this form.

Assurance Statements

(Submitting this proposal to the Division of Water Quality, DWQ, assumes that the lead organization agrees with the terms and conditions of the following statements).

Nonpoint Source (NPS) Priority Waters:

All geographic targeting for best management practice (BMP) implementation will be consistent the 303(d) list waters in the most recent basinwide plan for the Roanoke, White Oak, Savannah, Little Tennessee, Watauga, Hiwassee, Chowan, and Pasquotank Basins. For all others refer to the 1996 303(d) list.

NPDES Stormwater Requirements:

BMPs required by a NPDES stormwater control permit will not be implemented with funds from Section 319(h).

Minimum BMP Standards:

Unless the project is demonstrating new technology, BMP standards for installation or for BMP manuals will be consistent with established management measures published in EPA's January 1993 "Guidance Specifying Management Measures for Nonpoint Control in the Coastal Zone," or other BMP standards adopted by a North Carolina State agency. This includes BMPs installed as part of the non-federal match for the project. If farms are participating through the implementation of nutrient or pesticide BMPs, then the farms must have nutrient or pesticide management plans developed for the whole farm.

Assistance to Individuals:

The Federal cost-share rate with individuals will not exceed 75 percent of the cost of implementing the BMPs in a demonstration project.

Match:

Section 319 Pre-Proposal Form FY99
PART 1 (See Instructions for Part 1)

All invoices submitted to DWQ for payment of Section 319(h) grant funds will include a summary of non-federal match that has been credited toward project activities for the period of time covered by the invoice. Match activities will meet the same eligibility requirements of the federally funded portions of the project.

Reporting:

A quarterly report of project activity (beginning after the contract is signed) is required to be sent to DWQ. The report needs to cover only the status of the agreed outputs and milestones. **This reporting requirement must be fulfilled before invoices will be processed.** Reports are due in September, December, March, and June.

A final report is due within forty-five days of the end of the contract. The final report will include the following: an abstract detailing accomplishments; an evaluation of success in preventing and controlling NPS pollution; an estimate of the water quality improvement (e.g. pollutant load reductions), where appropriate; a summary of costs for installation, operation and maintenance of BMPs and the estimated economic returns to the landowner; a technology transfer plan; and photo-documentation of project and its success, if applicable. **The final invoice will not be reimbursed until the final report is supplied. Failure to supply the final report will impact the approval of future applications from your organization.**

Invoices:

Payment by the Department of Environment, Health and Natural Resources will be by invoice only. Submittal of an invoice must be accompanied by a statement of non-federal matching funds. **Future invoices will not be processed if a quarterly report on the description of completed activities has not been received by DWQ.**

Project Close-out and Record Keeping:

Records of the project must be kept by the lead organization for three years after completion pursuant to EPA grant rules. Project close-out procedures must comply with EPA guidance dated April 28, 1993.

Best management practices should be maintained 3 years after the closeout of the contract.

Section 319 Pre-Proposal Form
PART 2 (See Instructions for Part 2)

Name of Watershed: Cullasaja River Watershed

Watershed size (acres): 46,000 acres.

Name the rank/priority of the watershed. Not supporting uses. Impaired by sediment and nutrients.

Land uses within the watershed (percentage):

Agrioulture 5%	Urban 25%
Construction 25%	Mining
Silviculture	Other 45% - Forest

Within the watershed, list the following:

Stream miles 40 miles
Estuary acreage
Lake acreage

List State designated use(s) that are not being met (that is, fishability, swimmability, etc.):

Class C waters, aquatic life propagation/protection and secondary recreation, fishability, swimmability, livestock water supply.

List State water quality standard(s) violated (that is, dissolved oxygen, biochemical oxygen demand, fecal coliform, narrative, etc.): Nutrients (total nitrogen and phosphorus and chlorine) and Sediment.

List pollutants and sources affecting use(s) listed above:

Pollutants	Sources	Affected Use(s)
ex: Nutrients	ex: Dairies, cropland	ex: Fishability
Nutrients	Golf Courses, Residential Lawns, Roads.	Fishability, Recreation
Sediment	Golf Courses, Urban Development, Roads, Residential Areas, Streambank Erosion.	Fishability, Recreation

Section 319 Pre-Proposal Form
PART 2 (See Instructions for Part 2)

Estimate pollutant(s) control needed to achieve water quality goal (for example: reduce phosphate load by 40%): We are using native species to assist in the control of sediment and nutrients in riparian areas.

Best management practices/controls to be implemented:

Practices/controls	Estimated implementation
ex: Conservation tillage	ex: 2,000 acres
Streambank Restoration	3000 Feet
Riparian Restoration	3000 Feet

Estimate improved water quality:

Stream miles improved	40 miles
Estuarine acres improved	
Lake acres improved	

Monitoring design (provide monitoring plan in final submittal):

Paired watersheds	
Single downstream	
Upstream/downstream	X
No monitoring	
Other (Before/After)	X

Monitoring program elements:

Not applicable	
Chemical/physical	X
Biological	X
Sediment	X
Habitat	X
Volunteer Citizens	X

Funding requested from Section 319 (Include non-federal match):

	319 (h) Funding	Non-federal Match*
BMP Implementation	210,000	
Monitoring	80,000	DWQ: 10,000
Project Management		LTR NPS Team: 10,000
Public Education		
Other (specify)	Office Supplies: 10,000	Donations: 120,000
TOTAL	300,000	140,000

*Note: Of the total project funds, a minimum of 40% must come from non-federal sources.